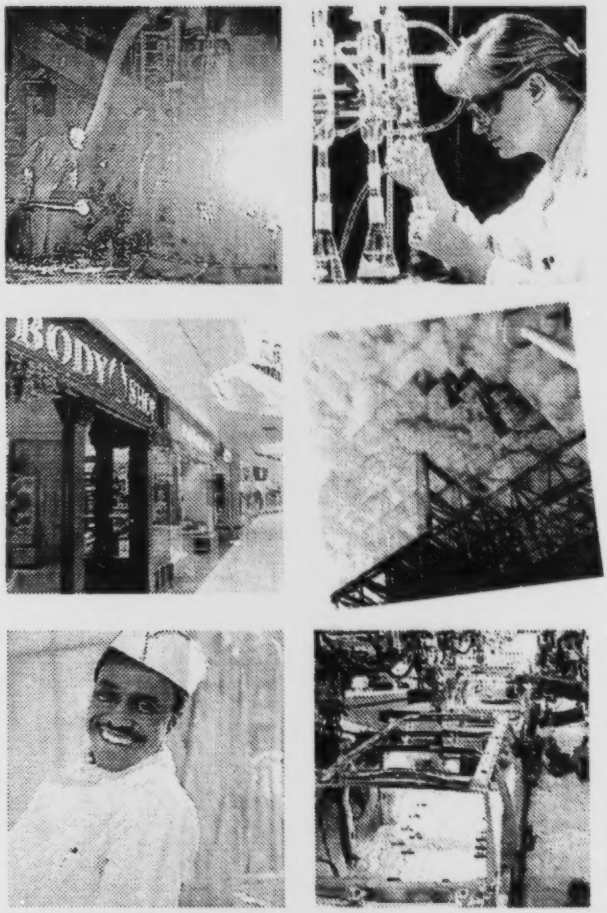
ENERGY EFFICIENCY



ENERGY AUDIT SOFTWARE DIRECTORY 1997

Natural Resources Canada | Ressources naturelles Canada

Canada

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INTRODUCTION

ENERGY AUDIT SOFTWARE DIRECTORY

SEPTEMBER 1997

AVANT-PROPOS

By promoting the adoption of proven energy efficiency measures, Natural Resources Canada helps Canadians to reduce their energy consumption, save money, stimulate the economy and protect the environment from harmful emissions associated with the generation and consumption of energy.

INTRODUCTION

Information about energy auditing software programs has been compiled and reviewed in this directory for facility managers or energy auditors. The idea behind self-audits is to minimize consulting costs at early stages and to direct professional expertise only at those areas that require detailed evaluation or modifications to save energy and operating dollars.

The present directory is an update of the directory published in January 1993 by Energy, Mines and Resources Canada, predecessor of Natural Resources Canada.

HOW TO USE THIS DIRECTORY

The directory provides a detailed listing by software name in alphabetical order, an appendix and an index at the end.

The software applications are categorized as follows:

SECTOR: Identifies the applicable sector for which the software is suitable: Industrial, Commercial or Residential. Some software may be suitable for more than one sector.

TYPE: Identifies the type of software: Performance, Simulation, Database, and Spreadsheet, which are defined below:

PERFORMANCE: This system is constructed on a database of components and average performance. This type of software uses the system to prompt the auditor to collect information and quantities. So the modelling and effects of change can be projected. This type of system is based on the results of previous audits and the averaging of component performance. It is mainly used for field audits and for identifying conservation opportunities.

SIMULATION: Simulation-type software was developed to link all the related components and systems, to represent existing systems or new designs, effectively creating a model.

Since components, electric systems, and operation methods vary by sector (industrial, commercial, residential), software operating beyond the component level is usually sector-specific, or extremely complex.

DATABASE: This system uses a component-based performance analysis or simulation to determine optimum energy consumption.

SPREADSHEET: Spreadsheet-type software is based on standard spreadsheet programs and provides calculations based on imbedded formulas. These programs are suitable both for tracking the actual consumption and associated costs and for simulating "what-if" situations for evaluating options or models. They are also good for charting the results.

DETAIL: This category defines the level of complexity of each software, as defined below.

SIMPLE: Simple applications are the most limited in detail. Calculations are of the first order, and the interaction of components in overall system response is often ignored. These applications are used to look at individual components in isolation.

COMPLEX: Complex applications fully integrate all energy-using components. These systems usually require a great deal of input data, time, and processing capability. They were developed for utilities conducting large demand-side management (DSM) programs involving hundreds of individual audits. Although this type of software exceeds the needs of site auditors, the entry package can be valuable in providing checklists and evaluating the site conditions versus the industry average.

AVAILABILITY OF SOFTWARE:

A large number of specialized software packages have been developed by utilities and government organizations for their in-house use. These may be made available free to selected groups or individuals, licensed commercially, or denied entirely to non-target groups. Commercial availability is listed where known at the time of compiling this directory. Other software packages may be available in the market..

FINAL NOTE ON THE RELIABILITY OF THE INFORMATION LISTED:

To stay current in the software marketplace, the user should monitor the updates of this directory, the professional journals, such as ASHRAE and *Energy Engineering*, as well as the on-line directory of the U.S. Department of Energy: www.eren.doe.gov/buildings/tools_directory/

For additions or changes to the information in this directory, please write to or fax:

Energy Audit Software Directory
Natural Resources Canada
Energy Efficiency Branch
Industrial, Commercial and Institutional Programs Division
580 Booth Street
Ottawa, Ontario
K1A 0E4
Fax: (613) 947-4121

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Prepared by : M. Khemani & Associates
1657 Ainsley Drive
Ottawa, ON
K2C 0S7

SOFTWARE: ADELINE 2.0

SUPPLIER:
Lawrence Berkeley National Laboratory
1 Cyclotron Road, MS 90-3111
Berkeley, CA 94720
USA
Web site: http://radsite.lbl.gov/adeline
Mr. Charles Ehrlich
Telephone: (510) 486-7916
Fax: (510) 486-4089
E-mail: ckehrlich@lbl.gov

SECTOR: Industrial/Commercial/Residential

TYPE: Performance/Simulation

DETAIL: Simple (SUPERLITE)/Complex (RADIANCE)

DESCRIPTION: ADELINE 2.0 is a package of two main simulation programs, SUPERLITE and RADIANCE, tied together with a DOS-based graphical user interface.

COST: US$450 including shipping. No tax.

HARDWARE: IBM compatible 486 or higher, DOS 5.0 or greater, needs 510 KB of low DOS memory plus 16 MB of extended memory and 20 MB of hard disk space. Will work under Windows NT, Windows 95, and SoftWindows, but not optimized (or guaranteed) for these environments.

COMMENTS:

SOFTWARE: AFT ARROW 1.0

SUPPLIER:
Applied Flow Technology
400 W. Highway 24, Suite 201
P.O. Box 6358
Woodland Park, CO 80863-6358
USA
Web site:
Mr. Trey Walters
Telephone: (719) 686-1000
Fax: (719) 686-1001
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: Compressible flow pipe network analysis.

COST: Not indicated.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 4 MB RAM, 5 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: AFT Engineering Utility Suite 1.0

SUPPLIER:
Applied Flow Technology
400 W. Highway 24, Suite 201
P.O. Box 6358
Woodland Park, CO 80863-6358
USA
Web site:
Mr. Trey Walters
Telephone: (719) 686-1000
Fax: (719) 686-1001
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: Thermal-fluid engineering utility programs.

COST: US$595

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 4 MB RAM, 5 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: AFT FATHOM 2.0

SUPPLIER:
Applied Flow Technology
400 W. Highway 24, Suite 201
P.O. Box 6358
Woodland Park, CO 80863-6358
USA
Web site:
Mr. Trey Walters
Telephone: (719) 686-1000
Fax: (719) 686-1001
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: Incompressible liquid flow and pipe network analysis.

COST: US$995

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 4 MB RAM, 5 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: AFT IMPULSE 1.0

SUPPLIER:
Applied Flow Technology
400 W. Highway 24, Suite 201
P.O. Box 6358
Woodland Park, CO 80863-6358
USA
Web site:
Mr. Trey Walters
Telephone: (719) 686-1000
Fax: (719) 686-1001
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: Water hammer / surge / transient pressure and pipe analysis.

COST: US$3995

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 4 MB RAM, 5 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: AFT Steam CALC 1.0

SUPPLIER:
Applied Flow Technology
400 W. Highway 24, Suite 201
P.O. Box 6358
Woodland Park, CO 80863-6358
USA
Web site:
Mr. Trey Walters
Telephone: (719) 686-1000
Fax: (719) 686-1001
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Database

DETAIL: Complex

DESCRIPTION: Steam-water property generator.

COST: US$495

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 4 MB RAM, 5 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: The software includes six months of free technical support.

SOFTWARE: **Air Humid Handling Version 5.0 for Windows**

SUPPLIER:
Zeller Consulting Suisse
Jurastrasse 35
CH-3063 Ittigen
Switzerland
Web site: http://www.geocities.com/Cape Canaveral/8573
Mr. Marin Zeller
Telephone: +41-31-922-0467
Fax: +41-31-922-0467
E-mail: zcsahh@swissonline.ch

SECTOR: Industrial

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: Mollier h-x diagram, air conditioning process, control ranges, building analysis, heating and cooling energy required, yearly climate data, economy of heat recovery systems.

COST: US$460 or C$640 payable in advance.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 4 MB RAM, 2 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: AnalyzIR

SUPPLIER:
FLIR Systems, Inc.
16505 SW 72nd Ave.
Portland, OR 97224
USA
Web site:
Ms. Ana Marie Smith, Inside Sales Manager
Telephone: (503) 684-3731
Fax: (503) 684-3207
E-mail:

SECTOR: Industrial/Commercial

TYPE: Analysis Report Generator

DETAIL: Simple

DESCRIPTION: AnalyzIR is a Windows compatible software for image analysis and report generation using digital infrared images captured using a variety of cameras such as the Prism DS. Analysis functions include crosspoints, line profiles, areas of interest and isotherms. Wizards automate the creation of reports used to communicate the results of thermal studies.

COST: Not indicated.

HARDWARE: IBM compatible pentium or higher, Windows 95, minimum 16 MB RAM, 15 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: **AUDIT for Windows 4.0**

SUPPLIER:
Elite Software
P. O. Box 1194
Bryan, TX 77806
USA
Web site: www.elitesoft.com/welcome.html
Mr. Steve Kelley
Telephone: (409) 846-2340 (954) 523-6206 (Steve Kelley in Florida)
Fax: (409) 846-4367
E-mail:

SECTOR: Residential/Light Commercial

TYPE: Simulation

DETAIL: Simple/Complex

DESCRIPTION: This program calculates the heating and cooling loads for residential and light commercial facilities to determine the annual fuel costs. ASHRAE bin method and equivalent full load hours are used for location-specific calculations.

COST: US$495

HARDWARE: IBM compatible Windows 3.X/95.

COMMENTS:

SOFTWARE: aveSARC (DOS)

SUPPLIER:
Tait Solar Co., Inc.
51 West 13th Street
Tempe, AZ 85281
USA
Web site:
Mr. David Tait
Telephone: (602) 829-8422
Fax: (602) 829-8619
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: aveSARC is an easy-to-use, menu-driven program to generate average-day solar values, instead of clear sky. It includes data for 248 cities with an option to add data for additional cities. It assists in analysis of active / passive solar and fenestration.

COST: US$159

HARDWARE: IBM compatible, DOS. Program available on 3.5 inch disk.

COMMENTS:

SOFTWARE: Ballast Master

SUPPLIER:
Washington State University
925 Plum St. SE, Suite #4
P.O. Box 43165
Olympia, WA 98504-3165
USA
Web site:
Mr. Mike McSorley
Telephone: (360) 956-2008
Fax: (360) 956-2217
E-mail: MMcSorley@wsu.edu

SECTOR: Industrial/Commercial

TYPE: Performance/Database

DETAIL: Simple

DESCRIPTION: Provides an electronic catalogue of over 4600 fluorescent lighting lamp / ballast combinations. It allows users to compare the cost of two alternative ballasts, taking into account the savings.

COST: US$200. If 150 copies are purchased by one buyer then the price is US$150 per copy.

HARDWARE: IBM compatible 486 or higher, DOS, minimum 640 KB RAM, 8 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: This is a DOS-based program.

SOFTWARE: BASECALC

SUPPLIER:
CANMET Energy Technology Branch
Natural Resources Canada
580 Booth Street, 7th Floor
Ottawa, ON
K1A 0E4
Web site:
Mr. Ian Beausoleil-Morrison
Telephone: (613) 943-2262
Fax: (613) 996-9416
E-mail: ibeausol@nrcan.gc.ca

SECTOR: Residential

TYPE: Simulation

DETAIL: Simple user interface with detailed calculations.

DESCRIPTION: BASECALC is a tool for modelling heat losses from residential basements and slabs-on-grade. It comprises a user-friendly graphical interface with a finite-element-based calculation core. The tool is designed for developing code requirements, for creating foundation heat-loss algorithms for whole-building programs, and for analysing the energy impact of insulation placements and systems.

COST: US$595 outside Canada, C$595 within Canada.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 8 MB RAM, 55 MB hard disk space. VGA or higher monitor.

COMMENTS:

SOFTWARE: BDA, Building Design Adviser

SUPPLIER:
Lawrence Berkeley National Laboratory
1 Cyclotron Road, MS 90-3111
Berkeley, CA 94720
USA
Web site:
Dr. Konstantinos Papamichael
Telephone: (510) 486-6854
Fax: (510) 486-4089
E-mail: K_Papamichael@lbl.gov

SECTOR: Industrial/Commercial/Residential

TYPE: Performance/Simulation/Database/Spreadsheet

DETAIL: Simple/Complex

DESCRIPTION: The BDA acts as a data manager and process controller to allow for concurrent, interoperable use of multiple simulation tools and databases, through a single graphical interface that supports multi-criterion decision-making. The 1.0 version is being linked to a schematic graphic editor, a daylight analysis tool, a thermal and energy analysis tool, and a Web-based Case Studies Database.

COST: Not decided. At the time of this write-up, the software was in Beta stage and the licensing and distribution issues were not resolved.

HARDWARE: IBM compatible, running MS-DOS.

COMMENTS:

SOFTWARE: **BEEM, Daylighting and Other Window Energy Effects**

SUPPLIER:
R. A. Rundquist Associates, Inc.
56 Ward Avenue
Northampton, MA 01060
USA
Web site:
Mr. Bob Rundquist
Telephone: (413) 586-7743
Fax: (413) 586-5912
E-mail:

SECTOR: Commercial

TYPE: Performance

DETAIL: Simple

DESCRIPTION: BEEM is a simplified program to calculate daylighting savings and HVAC effects of windows in commercial buildings. It is the result of research by ASHRAE, EPRI and others. The program reports peak and seasonal energy and dollar effects and compares options, with paybacks. It considers location, glass, shading, projections, automated louvers, control type, etc. It is menu-driven with context-sensitive help and free support.

COST: US$50

HARDWARE: IBM compatible 286 or higher, running DOS. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: **BESTEST, Building Energy Simulation Test**

SUPPLIER:
National Renewable Energy Laboratory
1617 Cole Boulevard
Golden, CO 80401
USA
Web site:
Mr. Ron Judkoff
Telephone: (303) 384-7520
Fax: (303) 384-7411
E-mail: JudkoffR@toplink.nrel.gov

SECTOR: Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: A method for testing and diagnosing the simulation capabilities of the exterior envelope portions of the energy simulation programs. BESTEST evaluates design and analysis tools relative to their ability to adequately model the envelope dynamics of buildings. It has been adopted for certifying tools for Home Energy Rating Systems and by other organizations. It includes weather data on diskette with a user manual. It needs input of thermal and physical characteristics as specified in the test case descriptions. It provides outputs of annual heating and cooling loads, for which the program undergoing test must be capable.

COST: Not indicated.

HARDWARE: Any platform.

COMMENTS:

SOFTWARE: **BLAST 4.0, Building Loads Analysis and System Thermodynamics**

SUPPLIER:
BLAST Support Office, University of Illinois
1206 W. Green St., 30 Mechanical Engineering Building
Urbana, IL 61801
USA
Web site:
Dr. Daniel Fisher
Telephone: (217) 333-3977
Fax: (217) 244-6534
E-mail:

SECTOR: Industrial/Commercial

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: Calculates the hourly heating and cooling loads and simulates the air handling systems. Hourly weather data for each site is used in modelling. Detailed equipment characteristics are used throughout the HVAC analysis.

COST: US$950 plus shipping and handling.

HARDWARE: IBM compatible 486 or higher, running DOS 3.3 or higher, Windows 3.X/NT/95, minimum 8 MB RAM, 6 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: The BLAST Graphical Interface (HBLC) is a Windows-based interactive program for producing BLAST input files.

SOFTWARE: BLCC, Building Life-Cycle Cost

SUPPLIER:
National Institute of Standards and Technology (NIST)
Office of Applied Economics
Building 226, Room B226
Gaithesburg, MD 20899
USA
Web site: www.eren.doe.gov/femp/ (Technical Assistance, Analytical Software Tools)
Ms. Sieglinde Fuller
Telephone: (301) 975-6134
Fax: (301) 208-6936
E-mail: fullers@mailserver.nist.gov

SECTOR: Industrial/Commercial/Residential

TYPE: Performance

DETAIL: Simple/Complex

DESCRIPTION: The BLCC computer program provides comprehensive economic analysis of proposed capital investments that are expected to reduce long-term operating costs of buildings or building systems. It is especially useful for evaluating energy and water conservation projects in buildings. Economic measures comprising lowest life-cycle cost, net savings, savings-to-investment ratio, adjusted internal rate of return, and payback period are calculated for any design alternative relative to the designated base case. Default discount rates and energy price projections by the U.S. Department of Energy are updated annually in April. BLCC complies with American Society for Testing and Materials (ASTM) standards related to building economics.

COST: Available free of charge.

HARDWARE: IBM-PC or compatible microcomputer, DOS 3.0 or higher, 640K RAM, 1.2 MB hard disk space. Can be run from Windows 3.X.

COMMENTS: To obtain a copy of BLCC, please call 1-800-DOE-EREC or download from URL www.eren.doe.gov/femp/ (Technical Assistance, Analytical Software Tools). Type BLCC4.EXE to unzip.

SOFTWARE: **Building Energy Simulation Template**

SUPPLIER:
Energy Resource Associates
1626 Holmes St.
Livermore, CA 94550
USA
Web site:
Mr. James P. Waltz
Telephone: (510) 447-1140
Fax: (510) 447-1706
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation/Spreadsheet

DETAIL: Simple

DESCRIPTION: This is a LOTUS 123 Template used to simulate building use by utility type. Can be used for preliminary analysis of large facilities or detailed analysis of smaller facilities (under 100,000 square feet).

COST: US$250

HARDWARE: IBM compatible, DOS 2.1 or higher, minimum 512 KB RAM, 1.44 MB hard disk drive, and wide carriage parallel printer. Available on 3.5 inch disk. Needs LOTUS 123.

COMMENTS:

SOFTWARE: CATALOGUE

SUPPLIER:
Enermodal Engineering Limited
650 Riverbend Drive
Kitchener, ON
N2L 4V1
Web site: http:\\www.enermodal.com
Mr. Alex McGowan
Telephone: (519) 743-8777
Fax: (519) 743-8778
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Database

DETAIL: Simple

DESCRIPTION: Listing of commercially available windows and doors, together with thermal performance data and manufacturer information.

COST: Available free of charge.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 4 MB RAM, 2.5 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Includes a database of all products certified by the Canadian Window and Door Manufacturers Association (CWDMA).

SOFTWARE: C-MAX 2.0/Centrifugal Compressor

SUPPLIER:
Unicade Inc.
1806-136th Place NE, Suite 4
Bellevue, WA 98005-2319
USA
Web site: www.unicade.com
Mr. Paresh S. Parekh
Telephone: (206) 747-0353
Fax: (206) 747-0316
E-mail: unicade@unicade.com

SECTOR: Industrial/Commercial

TYPE: Performance/Simulation

DETAIL: Complex

DESCRIPTION: Designed for centrifugal compressor systems analysis. The software uses polytropic equation and plots performance curve (along with surge and system curves). Multiple compressors and their case studies can be modelled with ease. Handles various pure gases and gaseous mixtures such as dry or wet air, hydrogen, nitrogen, refinery gas mixture, fuel gas, natural gas, etc. The software is designed using various engineering handbooks. The software includes Pipe module and is integrated with Energy Conservation Analysis, Economic Evaluation, Performance Charting, and other support modules.

COST: Single user list price US$990. Software licence with annual maintenance fee. Multi-user network version is also available.

HARDWARE: An Intel 486 or greater processor with a minimum of 8 MB RAM. Microsoft Windows 95 or Windows NT. A 3.5 inch floppy disk drive. Needs 20 MB available hard disk space for installation.

COMMENTS: Provides a quick, easy, and accurate method for analysing potential upgrades and new design for centrifugal compressor systems. Special attention is given to variable speed drive control. No computer programming experience is required. General knowledge about compressor system design and energy analysis is helpful.

SOFTWARE: C-MAX 2.0/Complete

SUPPLIER:
Unicade Inc.
1806-136th Place NE, Suite 4
Bellevue, WA 98005-2319
USA
Web site: www.unicade.com
Mr. Paresh S. Parekh
Telephone: (206) 747-0353
Fax: (206) 747-0316
E-mail: unicade@unicade.com

SECTOR: Industrial/Commercial

TYPE: Performance/Simulation

DETAIL: Complex

DESCRIPTION: Modularized software that systematically allows users to conduct industrial and commercial systems analysis to help evaluate options that could reduce the cost of owning, operating, and maintaining a facility; achieve energy conservation goals, and evaluate non-energy benefits. It allows unlimited "What-if" case analysis of the following systems: Centrifugal Pumps, Fans and Blowers, Centrifugal Compressors, Reciprocating Compressors, Rotary Screw Compressors, and Piping Networks. Other support modules include Equipment Performance Curve, Energy Conservation Measure (ECM), Life Cycle Costing, Non-Energy Benefits, Performance Charting, Electric Utility Rate, Chemical/Physical Properties, Engineering Units, and Print Form Engine.

COST: Single user list price US$1990. Software license with annual maintenance fee. Multi-user network version is also available.

HARDWARE: An Intel 486 or greater processor with a minimum of 8 MB RAM. Microsoft Windows 95 or Windows NT. A 3.5 inch floppy disk drive. Needs 20 MB available hard disk space for installation.

COMMENTS: Provides a quick, easy, and accurate method for analysing potential fluid flow systems upgrades and new design. Attention is given to energy conservation and life cycle costing analysis. No computer programming experience is required. General knowledge of fluid flow application (pump, fan, compressor, and pipe) and energy analysis is helpful.

SOFTWARE: C-MAX 2.0/Fan

SUPPLIER:
Unicade Inc.
1806-136th Place NE, Suite 4
Bellevue, WA 98005-2319
USA
Web site: www.unicade.com
Mr. Paresh S. Parekh
Telephone: (206) 747-0353
Fax: (206) 747-0316
E-mail: unicade@unicade.com

SECTOR: Industrial/Commercial

TYPE: Performance/Simulation

DETAIL: Complex

DESCRIPTION: The C-MAX/Fan/Blower software module has similar functionality as the Pump module. It uses industrial standard algorithms and methods for the system evaluation. The fan curves are plotted with the control of damper, inlet guide vanes, or variable speed drives. This module is designed using "Fan Engineering" (Buffalo Forge Co.) and Mark's Standard Handbook for Mechanical Engineers. The C-MAX/Fan software includes Pipe module and is integrated with Energy Conservation Analysis, Economic Evaluation, Performance Charting, and other support modules.

COST: Single user list price US$850. Software licence with annual maintenance fee. Multi-user network version is also available.

HARDWARE: An Intel 486 or greater processor with a minimum of 8 MB RAM. Microsoft Windows 95 or Windows NT. A 3.5 inch floppy disk drive. Needs 20 MB available hard disk space for installation.

COMMENTS: Provides a quick, easy, and accurate method for analysing potential upgrades and new design for fan systems. Special attention is given to damper, variable speed drive, and inlet guide vanes control. No computer programming experience is required. General knowledge of fan system design and energy analysis is helpful.

SOFTWARE: C-MAX 2.0/Pipe

SUPPLIER:
Unicade Inc.
1806-136th Place NE, Suite 4
Bellevue, WA 98005-2319
USA
Web site: www.unicade.com
Mr. Paresh S. Parekh
Telephone: (206) 747-0353
Fax: (206) 747-0316
E-mail: unicade@unicade.com

SECTOR: Industrial/Commercial

TYPE: Performance/Simulation

DETAIL: Complex

DESCRIPTION: C-MAX/Pipe software calculates pressure drop, velocity, flow rate, and pipe diameter. Equivalent length of fitting and valves are calculated by either L/D or K method. The calculated pressure drop (or any other data) is available to other C-MAX modules for energy, economic, or performance analysis. Various engineering formulas are available for single-phase fluid, gas, and steam flow pipe sizing. The friction factor and pipe internal diameter are computed automatically. This module is based on Crane Technical Paper No. 410, "Flow of Fluids through Valves, Fittings and Pipe." This module is tightly integrated with other C-MAX modules such as Pump, Fan, and Compressors.

COST: Single user list price US$390. Software licence with annual maintenance fee. Multi-user network version is also available.

HARDWARE: An Intel 486 or greater processor with a minimum of 8 MB RAM. Microsoft Windows 95 or Windows NT. A 3.5 inch floppy disk drive. Needs 20 MB available hard disk space for installation.

COMMENTS: Provides a quick, easy, and accurate method for analysing potential upgrades and new designs for piping systems. Special attention is given to fitting and valves. In-depth, on-line help by topics, content, index, context sensitive and balloon help. No computer programming experience is required. General knowledge of piping design is helpful.

SOFTWARE: C-MAX 2.0/Pump

SUPPLIER:
Unicade Inc.
1806-136th Place NE, Suite 4
Bellevue, WA 98005-2319
USA
Web site: www.unicade.com
Mr. Paresh S. Parekh
Telephone: (206) 747-0353
Fax: (206) 747-0316
E-mail: unicade@unicade.com

SECTOR: Industrial/Commercial

TYPE: Performance/Simulation

DETAIL: Complex

DESCRIPTION: The C-MAX/Pump software uses the Systems Analysis approach to calculate break horsepower (bhp), plate horsepower, total dynamic head (TDH), and flow rate for a centrifugal pump. The pump flow rate or TDH can be calculated from electric consumption if motor power draw data are available. The efficiency of adjustable speed drive (ASD) and part load efficiency of motors for certain horsepower is computed and used in the calculation. Pump curves are plotted under various operating conditions. Adjustments to the pump efficiency and pressure drops across control valve or other devices are made automatically when the pump is operated on its base characteristic curve. The C-MAX/Pump software includes Pipe module and is integrated with Energy Conservation Analysis, Economic Evaluation, Performance Charting, and other support modules.

COST: Single user list price US$990. Software licence with annual maintenance fee. Network version is available.

HARDWARE: An Intel 486 or greater processor with a minimum of 8 MB RAM. Microsoft Windows 95 or Windows NT. A 3.5 inch floppy disk drive. Needs 20 MB available hard disk space for installation.

COMMENTS: Provides a quick, easy, and accurate method for analysing potential upgrades and new design for pump systems. Special attention is given to performance curve fitting. No computer programming experience is required. General knowledge of pumping system design and energy analysis is helpful.

SOFTWARE: COMTECH

SUPPLIER:
Regional Economic Research, Inc.
12520 High Bluff Drive, Suite 220
San Diego, CA 92130
USA
Web site: www.rer.com
Mr. Bob Ramirez
Telephone: (619) 481-0081
Fax: (619) 481-7550
E-mail:

SECTOR: Commercial

TYPE: Performance

DETAIL: Simple

DESCRIPTION: An interactive program for screening a variety of HVAC systems in commercial buildings. Includes prototype building shapes and default HVAC systems.

COST: US$950

HARDWARE: IBM compatible, running DOS, minimum 4 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Training and custom enhancements available. HVAC technologies include conventional and high-efficiency cooling, thermal storage, gas cooling, cogeneration etc.

SOFTWARE: CONFTEMP (DOS)

SUPPLIER:
Tait Solar Co., Inc.
51 West 13th Street
Tempe, AZ 85281
USA
Web site:
Mr. David Tait
Telephone: (602) 829-8422
Fax: (602) 829-8619
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: CONFTEMP analyses the comfort factors related to window glass. It bases its calculations on Predicted Mean Vote methodology. It uses inputs of glazing type, orientation, size, overhang, room dimensions and human locations. The program includes data for 248 locations and several glazing types.

COST: US$399

HARDWARE: IBM compatible, DOS. Program available on 3.5 inch disk.

COMMENTS:

SOFTWARE: CONVEQS

SUPPLIER:
Taitem Engineering
963 Comfort Road
Spencer, NY 14883
USA
Web site:
Mr. Ian Shapiro, P.E.
Telephone: (607) 277-1118 or (800) 216-5638
Fax: (607) 277-2119
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Unit Conversion

DETAIL: Simple

DESCRIPTION: Conversion of energy quantities (unit conversion)

COST: US$145

HARDWARE: IBM compatible, running DOS. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: COOLAID

SUPPLIER:
Regional Economic Research, Inc.
12520 High Bluff Drive, Suite 220
San Diego, CA 92130
USA
Web site: www.rer.com
Mr. Bob Ramirez
Telephone: (619) 481-0081
Fax: (619) 481-7550
E-mail:

SECTOR: Commercial

TYPE: Performance

DETAIL: Simple

DESCRIPTION: An interactive program for comparing conventional cooling systems to thermal cool storage systems in commercial buildings. Includes prototype building shapes and default HVAC systems.

COST: US$895

HARDWARE: IBM compatible, running DOS, minimum 3 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Training and custom enhancements available. Extensive number of prototype building shapes and HVAC default systems available.

SOFTWARE: CUBS, Crisp Utility Billing System

SUPPLIER:
Optimum Energy Products Ltd.
47 Millside Way SW
Calgary, AB
T2Y 2N4
Web site: www.optimumenergy.com/
Mr. Grant Meadows
Telephone: (403) 256-3636
Fax: (403) 256-9099
E-mail: grantm@optimumenergy.com

SECTOR: Industrial/Commercial

TYPE: Database

DETAIL: Simple

DESCRIPTION: CUBS is an electronic commerce tool that allows users to receive electronic utility bills from participating electric and gas utilities. It helps automate the bill payment process and reduce associate input labour and other costs by over 80%. CUBS has a suite of audit control reports and basic engineering analysis reports for operations personnel.

COST: C$1995

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 12 MB RAM, 20 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Also accepts electronic billing data from propane, gas, vehicle leasing and other suppliers.

SOFTWARE: CYCLE_D, Vapor Compression Cycle Design Program

SUPPLIER:
National Institute of Standards and Technology (NIST)
Standard Reference Data Program
820 W. Diamond Ave.
Gaithesburg, MD 20899
USA
Web site: http://www.nist.gov/srd
Ms. Joan Sauerwein
Telephone: (301) 975-2208
Fax: (301) 926-0416
E-mail: joan.sauerwein@nist.gov

SECTOR: Industrial/Commercial/Residential

TYPE: Database

DETAIL: Complex

DESCRIPTION: The CYCLE_D database package simulates the vapor compression refrigeration cycles using the 38 pure fluids and mixtures covered by the well-known and widely-used NIST Standard Reference Database 23–NIST Thermophysical Properties of Refrigerants and Refrigerant Mixtures. Using the Carnahan-Starling-DeSantis equation of state for all fluids except ammonia, the model can simulate a reversed Rankine cycle and a cycle with a liquid-line/suction-line heat exchanger. The high-accuracy formulation developed by Haar and Gallagher is used for ammonia. CYCLE_D operates in a user-friendly Windows environment to facilitate evaluating the performance of selected working fluids at different operating conditions.

COST: US$390

HARDWARE: IBM-compatible personal computers capable of running MS-Windows version 3.1 or higher. A math coprocessor is optional, but strongly recommended; hard disk with 2 MB available space is required.

COMMENTS: NIST Standard Reference Database 49–CYCLE_D: NIST Vapor Compression Cycle Design Program

SOFTWARE: Demand Analyzer

SUPPLIER:
ITEM Systems
321 High School Road, Suite 344
Bainbridge Island, WA 98110
USA
Web site: http://www.halcyon.com/byrne
Mr. Steve Byrne
Telephone: (206) 855-9540
Fax: (206) 855-9541
E-mail: byrne@item.com

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: Demand Analyzer allows a user to quickly analyse buildings and energy conservation measures (ECM) using DOE-2.1E, providing a screening tool for first analysis. The user does not need to have any knowledge of DOE-2 program or the DOE-2 Building Description Language. Templates of 18 building types, each with 3 vintages, are built into Demand Analyzer. The templates have been developed through analyses of surveys and monitored data and the energy use of each base-case has been validated by electric and gas utilities from monitored buildings. The ECM are based on commercially available products and represent several hundred options suitable for retrofit or new construction. The Buildings created in Demand Analyzer can be exported to DOE-Plus and to Prep.

COST: US$995

HARDWARE: IBM compatible 386 or higher, Windows 3.X/NT/95, minimum 4 MB RAM, 10 MB hard disk space.

COMMENTS: Brochure and Demo available at http://www.halcyon.com/byrne.

SOFTWARE: DISCOUNT

SUPPLIER:
National Institute of Standards and Technology (NIST)
Office of Applied Economics
Building 226, Room B226
Gaithesburg, MD 20899
USA
Web site: www.eren.doe.gov/femp/ (Technical Assistance, Analytical Software Tools)
Ms. Sieglinde Fuller
Telephone: (301) 975-6134
Fax: (301) 208-6936
E-mail: fullers@mailserver.nist.gov

SECTOR: Industrial/Commercial/Residential

TYPE: Performance

DETAIL: Simple

DESCRIPTION: The DISCOUNT Program computes discount factors and related present values, future values, and periodic payment values of cash flows occurring at known points in time. DISCOUNT computations are especially useful in life-cycle cost analyses and engineering economics problems not requiring comprehensive summation and reporting. Default discount rates and energy price projections by the U.S. Department of Energy are updated annually in April.

COST: Available free of charge.

HARDWARE: IBM-PC or compatible microcomputer, DOS 3.0 or higher, 640K RAM, 1.2 MB hard disk space. Can be run from Windows 3.X.

COMMENTS: To obtain a copy of DISCOUNT, please call 1-800-DOE-EREC or download from www.eren.doe.gov/femp/ (Technical Assistance, Analytical Software Tools). Type DISCOUNT.EXE to unzip.

SOFTWARE: DOE-2

SUPPLIER:
Energy Science and Technology Software Center
P.O. Box 1020
Oak Ridge, TN 37831
USA
Web site:
Mr. Walt Kelley
Telephone: (615) 576-2606
Fax: (615) 576-2865
E-mail:

SECTOR: Commercial/Residential

TYPE: Performance/Simulation

DETAIL: Complex

DESCRIPTION: DOE-2 is an hourly building energy simulation program. It calculates building thermal loads, HVAC systems performance, energy-cost and life-cycle economics. It allows detailed load-calculations with features such as solar shading, daylighting, interzone conduction, and sun space/atrium calculation. Choice of 20+ air distribution system types is available. Customizable performance curve-based calculation of plant components (boilers, chillers, cooling towers, ice storage, generators, etc.) is possible. Options for heat recovery and load management can be included. It is applicable to all building types. Available with a range of user interfaces from text-based to graphical.

COST: US$300 – $1500 depending on vendor and interface features.

HARDWARE: For PCs: 486 or higher, DOS or Windows, 8 MB RAM, 20 MB hard disk space.
For Unix Workstations: SunOS or Solaris, 8 MB RAM, 20 MB hard disk space.

COMMENTS: Current version is DOE-2.1E. Enhanced version, DOE-2.2, with new loads features (window blind simulation, lamp/luminaire lighting calculation) and integrated Systems/Plant program will be available in Summer 1997.

SOFTWARE: DOE-Plus

SUPPLIER:
ITEM Systems
321 High School Road, Suite 344
Bainbridge Island, WA 98110
USA
Web site: http://www.halcyon.com/byrne
Mr. Steve Byrne
Telephone: (206) 855-9540
Fax: (206) 855-9541
E-mail: byrne@item.com

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: DOE-Plus is an interactive program used to create or edit a complete description of a building, simulate the building with DOE-2, and graphically analyse the simulation results. DOE-Plus is a complete implementation of DOE-2, with the added benefits of quick, easy entry of building description data with context-sensitive help messages (including definitions and sample input for DOE-2 keywords) and interactive error-checking of input data. Additional features include graphical analysis of a building (DOE-Plus will draw a 3-D view of the building that can be interactively rotated), graphical analysis of the simulation results (DOE-Plus will plot data from DOE-2 standard reports in user-defined graphs), display of a building description file, display of a multi-year calendar to aid in scheduling building occupancy events and graphical entry of occupancy schedules using a bar-chart format.

COST: US$895

HARDWARE: IBM compatible 386 or higher, Windows 3.X/NT/95, minimum 640 KB RAM, 0.5 MB hard disk space.

COMMENTS: Brochure and Demo available at http://www.halcyon.com/byrne.

SOFTWARE: ECAM LNX

SUPPLIER:
ECAM Systems Inc.
12 Stanley Ct., Unit 3
Whitby, ON
L1N 8P9
Web site:
Mr. A. Crossley
Telephone: (905) 430-1170
Fax: (905) 430-3226
E-mail:

SECTOR: Industrial/Commercial

TYPE: Simulation/Database/Spreadsheet

DETAIL: Simple

DESCRIPTION: ECAM LNX allows for the measurement of up to four pulse metering signals and allows for real-time monitoring of the measured points. All monitored data is stored for later analysis and/or export to spreadsheet.

COST: C$6000

HARDWARE: IBM compatible 386 or higher, running DOS-Multitask, Windows 3.X/95, minimum 8 MB RAM, 10 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Designed for deregulation to provide managers with the necessary information to establish energy benchmarks and make the best purchasing decisions.

SOFTWARE: ECAMNET

SUPPLIER:
ECAM Systems Inc.
12 Stanley Ct., Unit 3
Whitby, ON
L1N 8P9
Web site:
Mr. A. Crossley
Telephone: (905) 430-1170
Fax: (905) 430-3226
E-mail:

SECTOR: Industrial/Commercial

TYPE: Performance/Simulation/Database/Spreadsheet

DETAIL: Complex

DESCRIPTION: ECAMNET allows for real-time monitoring and control of hundreds of energy monitoring points. Functions also include alarm and status monitoring. ECAMNET allows multi-user access to the real-time and historical data. Compatible with TCP/IP networks.

COST: C$40,000+

HARDWARE: IBM compatible pentium server or higher, Windows 3.X/NT/95, minimum 16 MB RAM, 30 MB hard disk space.

COMMENTS:

SOFTWARE: ECAM POWER UP

SUPPLIER:
ECAM Systems Inc.
12 Stanley Ct., Unit 3
Whitby, ON
L1N 8P9
Web site:
Mr. A. Crossley
Telephone: (905) 430-1170
Fax: (905) 430-3226
E-mail:

SECTOR: Industrial/Commercial

TYPE: Simulation/Database/Spreadsheet

DETAIL: Simple/Complex

DESCRIPTION: ECAM POWER UP allows for the monitoring of hundreds of points and also has the ability to perform real-time control, both for demand and real-time pricing. Has built-in analysis tools.

COST: C$12,000+

HARDWARE: IBM compatible 486 or higher, running DOS-Multitask, Windows 3.X/95, minimum 8 MB RAM, 15 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: **ECAS, Energy Conservation Analysis System**

SUPPLIER:
General Energy Technologies
100 Via Quito, P.O. Box 2178
Newport Beach, CA 92663
USA
Web site:
Mr. David Farrell
Telephone: (714) 673-4222
Fax: (714) 673-4122
E-mail: dfarrell@nbonline.com or getc.nbonline.com

SECTOR: Industrial/Commercial/Residential

TYPE: Performance/Simulation/Database

DETAIL: Complex

DESCRIPTION: ECAS is an energy cost-accounting, consumption analysis dynamic system, developed over the past fifteen years from more than 2000 energy audits of all types and sizes of facilities. ECAS organizes and maintains all the information about energy-consuming devices and how energy is consumed and uses this information to produce summaries, status reports, feasibility studies and proposals to reduce costs. ECAS can be used from simple calculations to complex "what-if" modelling. ECAS includes Utility Bill Accounting System (UBAS) and Electric Utility Rate Analysis (EURA), described separately.

COST: US$770 for stand alones, US$1770 for small networks up to five stations and US$2770 for large networks with any number of stations. The prices include UBAS and EURA.

HARDWARE: IBM compatible , running Windows 3.X/95.

COMMENTS:

SOFTWARE: EDAT, Electrical Data Analysis Template

SUPPLIER:
Energy Resource Associates
1626 Holmes St.
Livermore, CA 94550
USA
Web site:
Mr. James P. Waltz
Telephone: (510) 447-1140
Fax: (510) 447-1706
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Performance/Spreadsheet

DETAIL: Simple

DESCRIPTION: This spreadsheet is used to record and analyse a series of measured electrical characteristics to determine the load profile, power and energy components (volts, watts, and power factor). Very useful for baseline tabulation for Options A and B under the DOE's NEMVP.

COST: US$100

HARDWARE: IBM compatible, DOS 2.1 or higher, minimum 512 KB RAM, 1.44 MB disk drive, and wide carriage parallel printer. Available on 3.5 inch disk. Needs LOTUS 123.

COMMENTS:

SOFTWARE: ELOG 97

SUPPLIER:
Optimum Energy Products Ltd.
47 Millside Way SW
Calgary, AB
T2Y 2N4
Web site: www.optimumenergy.com/
Mr. Grant Meadows
Telephone: (403) 256-3636
Fax: (403) 256-9099
E-mail: grantm@optimumenergy.com

SECTOR: Industrial/Commercial

TYPE: Performance

DETAIL: Simple

DESCRIPTION: ELOG 97 allows users to analyse, graph, trend and report data retrieved from Optimum's energy-loggers and Elite's data-loggers. It allows one to monitor and report amperes, volts, watts, VA, Var, power factor and other values. Used in services up to 600 Volt, 3000 Amp. It allows retrieval of data in real-time or stores it internally.

COST: C$129. Provided free of charge with above data/energy loggers.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 8 MB RAM, 20 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: EMISS

SUPPLIER:
National Institute of Standards and Technology (NIST)
Office of Applied Economics
Building 226, Room B226
Gaithesburg, MD 20899
USA
Web site: www.eren.doe.gov/femp/ (Technical Assistance, Analytical Software Tools)
Ms. Sieglinde Fuller
Telephone: (301) 975-6134
Fax: (301) 208-6936
E-mail: fullers@mailserver.nist.gov

SECTOR: Industrial/Commercial/Residential

TYPE: Performance

DETAIL: Simple/Complex

DESCRIPTION: The EMISS program is a stand-alone computer program used to generate files with regional or local air pollution emission factors for use with the BLCC life-cycle cost program. BLCC uses these emission factors to calculate air pollution emissions associated with energy use in buildings and reductions in those emissions attributable to energy conservation measures. Three types of emissions factors are currently included: carbon dioxide, sulphur dioxide, and nitrous oxide. They are specified separately for six different end-use energy types. The emission factors can be localized by entering building site-specific input values.

COST: Available free of charge.

HARDWARE: IBM-PC or compatible microcomputer, DOS 3.0 or higher, 640K RAM, 1.2 MB hard disk space. Can be run from Windows 3.X.

COMMENTS: To obtain a copy of EMISS, please call 1-800-DOE-EREC or download from www.eren.doe.gov/femp/ (Technical Assistance, Analytical Software Tools). Type EMISS.EXE to unzip.

SOFTWARE: ENERGY-10

SUPPLIER:
Passive Solar Industries Council
1511 K St. NW, Suite 600
Washington, DC 20005
USA
Web site:
Mr. Doug Schroeder
Telephone: (202) 628-7540
Fax: (202) 393-5043
E-mail:

SECTOR: Commercial/Residential

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: Windows program, automates tedious input and changes processes. Fast, easy-to-use, accurate.

COST: US$250

HARDWARE: IBM compatible 486 or higher, minimum 16 MB RAM, 10 MB hard disk space.

COMMENTS: Adaptation to metric system is nearly complete. See article in *Solar Today*, May/June 1996.

SOFTWARE: Energy Accounting Report System

SUPPLIER:
Energy Resource Associates
1626 Holmes St.
Livermore, CA 94550
USA
Web site:
Mr. James P. Waltz
Telephone: (510) 447-1140
Fax: (510) 447-1706
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Performance

DETAIL: Complex

DESCRIPTION: Allows the systematic tracking of various energy forms via billings. Establishes and analyses trends. Performs Option C measurement and verification per U.S. DOE's NEMVP.

COST: US$495

HARDWARE: IBM compatible, DOS 2.1 or higher, minimum 512 KB RAM, 1.44 MB disk drive, and wide carriage parallel printer. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: ENERGY EXECUTIVE III

SUPPLIER:
Elemco Building Controls, Inc.
1324 Motor Parkway, Suite 112
Hauppauge, NY 11788
USA
Web site:
Mr. Zachary Stern
Telephone: (516) 582-8266
Fax: (516) 582-5329
E-mail:

SECTOR: Industrial/Commercial

TYPE: Performance

DETAIL: Complex

DESCRIPTION: Measurement and verification, data acquisition and control. Monitors all analog, digital, binary, pulse type data.

COST: US$2500–$7500

HARDWARE: IBM compatible pentium or higher, Windows NT/95, minimum 32 MB RAM, 100 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: ENERPASS

SUPPLIER:
Enermodal Engineering Limited
650 Riverbend Drive
Kitchener, ON
N2L 4V1
Web site: http:\\www.enermodal.com
Mr. Alex McGowan
Telephone: (519) 743-8777
Fax: (519) 743-8778
E-mail:

SECTOR: Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: Detailed hour-by-hour calculation of total building energy consumption (heating, cooling, ventilation, lighting, electrical, water-heating).

COST: C$395

HARDWARE: IBM compatible 486 or higher, running DOS 5.0+,Windows 3.X/95, minimum 4 MB RAM, 1.2 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Independent scheduling of zone temperature controls, lights, fans, occupants, etc. Uses TMY weather data (provided with the software). Performs latent and sensible heat calculations, thermal mass, passive solar models, and daylighting.

SOFTWARE: EnergyPro

SUPPLIER:
Gabel Dodd/EnergySoft
100 Galli Drive, Suite #1
Novato, CA 94949-5657
USA
Web site: www.energysoft.com
Mr. Eric Walstad
Telephone: (415) 883-5900
Fax: (415) 883-5970
E-mail:

SECTOR: Commercial/Residential

TYPE: Performance/Simulation.

DETAIL: Complex

DESCRIPTION: EnergyPro features a number of modules designed to appeal to a wide range of professionals in the building industry. Modules specially designed for residential buildings include residential load calculations and State-certified California Title 24 compliance calculations (Point System and Residential Simulation). Non-residential modules include non-residential heating and cooling loads, California Title 24 Prescriptive Method compliance calculations, and tailored lighting calculations. Also available is the Win/DOE module, a fully functional version of the DOE 2.1E hourly simulation analysis software, meeting the certification standards of the CEC. Also a version of DOE-2 is available for use outside California. EnergyPro also includes external links to the Common Energy Standard (CES) file technology, which allows the user to plug in new energy standards, such as Standard 90, as they become available. Using the Standards software, state agencies can now deliver fully functional CES files, which contain specific implementations of energy standards for code compliance.

COST: Request price list.

HARDWARE: IBM compatible 486 or higher, Windows NT/95, minimum 16 MB RAM, 10–20 MB disk space. Available on 3.5 inch disk/CD-ROM.

COMMENTS: Visit web site at www.energysoft.com, and download free demo.

SOFTWARE: EPLAN

SUPPLIER:
Efficiency Software of Ermont, Inc.
RR1, Box 144 Buzzel Road
Newport Center, VT 05857
USA
Web site:
Dr. Richard Desrosiers
Telephone: (802) 334-7279
Fax:
E-mail: Rick.D@connriver.net

SECTOR: Industrial/Commercial/Residential

TYPE: Performance/Simulation/Database/Spreadsheet

DETAIL: Simple/Complex

DESCRIPTION: Full energy simulation from both consumer and utility perspective. Demand-Side Management software using Lotus-123 platform programmed spreadsheet. Includes databases.

COST: US$199

HARDWARE: IBM compatible, Windows 3.X/95, minimum 8 MB RAM, 5 MB hard disk space. Needs Lotus-123. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: **EPRI Rate Manager**

SUPPLIER:
EPS Solutions, Inc.
261 School Ave.
Excelsior, MN 55331
USA
Web site:
Mr. Ryan Ness
Telephone: (612) 473-1303
Fax: (612) 473-1466
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Database

DETAIL: Simple

DESCRIPTION: Easy-to-use customer rate comparison tool. Very flexible and can handle multiple levels of detail. Can model virtually any rate or price schedule. Rate comparisons, conjunctive (aggregate) billing, Real Time Purchasing.

COST: Not indicated; one year lease.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 16 MB RAM, 20 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: ERATES

SUPPLIER:
National Institute of Standards and Technology (NIST)
Office of Applied Economics
Building 226, Room B226
Gaithesburg, MD 20899
USA
Web site: www.eren.doe.gov/femp/ (Technical Assistance, Analytical Software Tools)
Ms. Sieglinde Fuller
Telephone: (301) 975-6134
Fax: (301) 208-6936
E-mail: fullers@mailserver.nist.gov

SECTOR: Industrial/Commercial/Residential

TYPE: Performance

DETAIL: Simple/Complex

DESCRIPTION: ERATES is a stand-alone program for calculating monthly and annual electricity costs for a facility, building, or system under a variety of electric utility rate schedules. Both kWh usage and maximum kW demand charges can be included in these costs. ERATES sets up block-rate, time-of-use-rate, and demand-rate schedules and computes electricity costs based on those schedules. These schedules can be imported by the BLCC and QBLCC computer programs for use in computing life-cycle costs of buildings and building systems.

COST: Available free of charge.

HARDWARE: IBM-PC or compatible microcomputer, DOS 3.0 or higher, 640K RAM, 1.2 MB hard disk space. Can be run from Windows 3.X.

COMMENTS: To obtain a copy of ERATES, please call 1-800-DOE-EREC or download from www.eren.doe.gov/femp/ (Technical Assistance, Analytical Software Tools). Type ERATES.EXE to unzip.

SOFTWARE: EURA, Electric Utility Rate Analysis

SUPPLIER:
General Energy Technologies
100 Via Quito, P.O. Box 2178
Newport Beach, CA 92663
USA
Web site:
Mr. David Farrell
Telephone: (714) 673-4222
Fax: (714) 673-4122
E-mail: dfarrell@nbonline.com or getc.nbonline.com

SECTOR: Industrial/Commercial/Residential

TYPE: Performance/Simulation/Database

DETAIL: Complex

DESCRIPTION: EURA enables users to determine which rate is best based on the building's actual operating data or a simulated set of data. Simply enter the utility rate structures and the operating facts or use Utility Bill Accounting System (UBAS, described separately), billing and building facts. EURA calculates energy costs for any rate structure or compares and priortizes up to five rate structures at the same time for any set of operating data. Exception routines select the best rate and automatically write to the utility company requesting a change, if so selected.

COST: US$270 for stand alones, US$470 for small networks up to five stations and US$670 for large networks with any number of stations. EURA may be purchased as a part of the Energy Conservation Analysis System (ECAS, described separate), together with UBAS.

HARDWARE: IBM compatible, running Windows 3.X/95.

COMMENTS:

SOFTWARE: FASER

SUPPLIER:
Engineering Interface
2 Sheppard Ave. E., Suite 200
North York, ON
M2N 5Y7
Web site:
Mr. Mark Noesch
Telephone: (416) 226-6565
Fax: (416) 226-6576
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Performance

DETAIL: Complex

DESCRIPTION: An energy accounting program for multiple meters and facilities. It can perform regression analysis for weather effects.

COST: C$3600+. Available from Engineering Interface in Canada and from Omni Comp or Elite in the United States.

HARDWARE: IBM compatible 486 or higher, running on DOS or Windows 3.X, minimum 4 MB RAM, 10 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Both Windows and DOS versions are available.

SOFTWARE: **FEDS, Facility Energy Decision System**

SUPPLIER:
Battelle Pacific Northwest National Laboratory
P.O. Box 999, K5-02
Richland, WA 99352
USA
Web site:
Ms. Rosemarie Bartlett
Telephone: (509) 375-6606
Fax: (509) 375-3970
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Performance/Simulation

DETAIL: Complex

DESCRIPTION: An easy-to-use but powerful tool that makes assessments and analyses energy efficiency in buildings. FEDS identifies retrofits, selects minimum life-cycle costs, determines payback, and enables users to prioritize options.

COST: Not indicated. Call for pricing information.

HARDWARE: IBM compatible 486 or higher, running DOS 5.0+,Windows 3.X/95, minimum 4 MB RAM, 13 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: FRAMEplus Toolkit

SUPPLIER:
Enermodal Engineering Limited
650 Riverbend Drive
Kitchener, ON
N2L 4V1
Web site: http:\\www.enermodal.com
Mr. Alex McGowan
Telephone: (519) 743-8777
Fax: (519) 743-8778
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: Finite-volume analysis of heat transfer through windows, doors, walls, roofs, basements, etc. Output includes U-values (R-values), temperatures, heat flow, and plots. Graphical, easy-to-use input.

COST: C$350

HARDWARE: IBM compatible 486 or higher, running DOS 5.0+,Windows 3.X/95, minimum 4 MB RAM, 4 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: National standard for evaluating the thermal performance of windows and doors in Canada, the United States and Australia; widely used in Europe. (Also available in French, German, and Swedish.)

SOFTWARE: **FRESA, Federal Renewable Energy Screening Assistant**

SUPPLIER:
National Renewable Energy Laboratory
1617 Cole Boulevard
Golden, CO 80401
USA
Web site:
Dr. Andy Walker
Telephone: (800) 363-3732
Fax:
E-mail: Walkera@tcplink.nrel.gov

SECTOR: Industrial/Commercial/Residential

TYPE: Database

DETAIL: Simple

DESCRIPTION: FRESA is a two-step process. The first step screens for cost-effectiveness of 16 renewable energy technologies based on fuel cost and location (zip code). The second step requires 6 to 10 parameters for each technology and calculates a savings-to-investment ratio and payback period. The program contains a database of weather of 239 sites in the United States, economic parameters (discount rate and fuel escalation rates) and renewable energy implementation costs.

COST: Available free of charge. Developed for federal facility managers.

HARDWARE: IBM compatible, minimum 7 MB hard disk space.

COMMENTS:

SOFTWARE: GATECYCLE

SUPPLIER:
Enter Software, Inc.
1490 Drew Ave., Suite 180
Davis, CA 95616
USA
Web site:
Mr. Philippe Heller
Telephone: (916) 757-1240
Fax: (916) 757-1571
E-mail:

SECTOR: Industrial

TYPE: Performance/Simulation

DETAIL: Complex

DESCRIPTION: Power Plant design and analysis software.

COST: US$15,000

HARDWARE: IBM compatible pentium or higher, running Windows 95.
Available on CD-ROM.

COMMENTS:

SOFTWARE: HAP, Hourly Analysis Program

SUPPLIER:
Carrier Corporation
Carrier Parkway
Syracuse, NY 13221
USA
Web site:
Ms. Sue Kilcoyne
Telephone: (315) 433-4247
Fax: (315) 432-6844
E-mail:

SECTOR: Commercial

TYPE: Performance/Simulation

DETAIL: Complex

DESCRIPTION: Building energy analysis software. Performs a full 8760 hour-per-year simulation of a building's HVAC systems. Provides both energy and cost breakdown. Models detailed electrical rates.

COST: US$1195

HARDWARE: IBM compatible 386 or greater, DOS, with minimum 1 MB RAM and 5 MB hard disk space. Program available on 3.5 inch disk.

COMMENTS:

SOFTWARE: HIREF (DOS)

SUPPLIER:
Tait Solar Co., Inc.
51 West 13th Street
Tempe, AZ 85281
USA
Web site:
Mr. David Tait
Telephone: (602) 829-8422
Fax: (602) 829-8619
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: HIREF determines the direction, length and intensity of reflected sunbeams from reflective surfaces of buildings. It uses ASHRAE clear sky solar radiation model and specular, angular dependent, reflection curves for 26 glazing types. HIREF calculates the hourly solar position, sunbeam reflection and clear sky solar radiation intensities of the reflected beams. It provides accurate evaluation of thermal and visual impacts of this reflected radiation.

COST: US$399

HARDWARE: IBM compatible, DOS. Program available on 3.5 inch disk.

COMMENTS:

SOFTWARE: HOT2000

SUPPLIER:
Canadian Home Builders Association
200–150 Laurier Ave. W.
Ottawa, ON
K1P 5J4
Web site: www.chba.ca/index.html
Mr. John Broniek
Telephone: (613) 230-3060
Fax: (613) 232-8214
E-mail:

SECTOR: Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: HOT2000 is an easy-to-use energy analysis and design software for low-rise residential buildings that is used in the industry by builders, engineers, architects, researchers, utilities and government agencies. Using current heat loss/gain and system performance models, the program aids the simulation and design of buildings for thermal effectiveness, passive solar heating, and the operation and performance of heating and cooling systems.

COST: US$325 outside Canada, C$295 within Canada.

HARDWARE: IBM compatible or Macintosh computers, operating on DOS or Mac 6.05 operating system, respectively. Needs minimum 2 MB RAM, 1 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: HOTCALC 2.0

SUPPLIER:
Electric Power Research Institute (EPRI) Water Heating Information Office
1720 Peachtree Road, Suite 584
Atlanta, GA 30309
USA
Web site: http://www.epriwhio.com
Mr. Don Abrams
Telephone: (404) 874-3922
Fax: (404) 874-7417
E-mail: whio@epriwhio.com

SECTOR: Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: HOTCALC simulates the performance of water-heating systems to provide information for application and design decision-making. HOTCALC models heat pump water heaters, electric resistance water heaters, and fuel-fired water heaters.

COST: US$295

HARDWARE: IBM compatible, running DOS, minimum 512 KB RAM, 2 MB hard disk space.

COMMENTS: A library of water usage data for 23 commercial sites is also available. It will run under Windows 95 and Windows NT.

SOFTWARE: HVACSIM+

SUPPLIER:
National Institute of Standards and Technology (NIST)
Building & Fire Research Laboratory – Building Environment Division
Building 226, Room B114
Gaithesburg, MD 20899-0001
USA
Web site:
Dr. Cheol Park
Telephone: (301) 975-5879
Fax: (301) 208-0485
E-mail: park.cheol@nist.gov

SECTOR: Commercial

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: Simulation program for modelling of a building HVAC system plus HVAC controls, the building shell, the heating/cooling plant, and energy management and control system (EMCS) algorithms.

COST: Free of charge.

HARDWARE: IBM compatible, DOS based, minimum 640 KB RAM, 3 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Programming language is Fortran 77. Modular approach is used.

SOFTWARE: IAQ-Tools

SUPPLIER:
Taitem Engineering
963 Comfort Road
Spencer, NY 14883
USA
Web site:
Mr. Ian Shapiro, P.E.
Telephone: (607) 277-1118 or (800) 216-5638
Fax: (607) 277-2119
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: Software for Indoor Air Quality analysis.

COST: US$345 (Windows Version) US$245 (DOS Version)

HARDWARE: IBM compatible 486 or pentium processor, running DOS, with or without Windows. Available on 3.5 inch disk. Windows Version can work on Windows 3.X, NT or 95.

COMMENTS:

SOFTWARE: **IDEAL (Interval Data Evaluation and Analysis of Load)**

SUPPLIER:
PC Applications Systems
4310 Twin Pines Drive
Knoxville, TN 37921-5143
USA
Web site:
Mr. John D.Helms, Jr., P.E.
Telephone: (423) 588-7363
Fax: (423) 584-1350
E-mail: john_helms@msn.com

SECTOR: Industrial/Commercial

TYPE: Performance/Simulation/Database/Spreadsheet

DETAIL: Simple/Complex

DESCRIPTION: The IDEAL program is designed to read electronic data records of facility electrical energy use recorded by electric utility companies, normally for billing purposes. Upon request, the utility will release these data to the customer. The format of these data number over 25 distinct file types. The IDEAL program translates these formats into a common database.

The output consists of both detailed and summary reports of the facility electrical usage. Pre-formatted graphs (about 70) visually depict power usage by day, week, or month. Variables include Kilowatts as a minimum, but may include KiloVars and KVA, if the source data file contains this information.

The IDEAL program should be used prior to any Energy Audit to identify, by time of day, periods of excessive power demands and consumption. Extensions to the basic program will perform power bill calculations, time-of-use analysis, temperature and humidity plots, and optimum standby generator sizing and run times.

COST: US$1000

HARDWARE: IBM compatible running MS-DOS. Needs less than 2 MB hard disk space.

COMMENTS: Suitable for industrial/commercial accounts, energy consulting firms and electric utilities.

SOFTWARE: **Indirect Evaporative Heat Exchanger Design Tools**

SUPPLIER:
Coolsys Ltd.
Nitzanim I.C.
Nahal, Soreq
Yavne 81800
Israel
Web site:
Mr. Mario Roter
Telephone: +972-8943-4415
Fax: +972-8943-4798
E-mail:

SECTOR: Industrial/Commercial

TYPE: Performance/Simulation

DETAIL: Simple

DESCRIPTION: Computes the heat-mass transfer process in Fixed Plate heat exchangers of different configurations. Can be used by designers of air conditioning systems with indirect evaporative air coolers or / and heat recovery units and by developers of such heat exchangers. Air conditioning system designers can obtain all the air process characteristics (output air parameters, pressure drops, energy capacity, etc.), including display on the psychrometric chart for a selected pre-defined heat exchanger, according to the input air parameters and airflows. Developers of heat exchanging devices can analyse the effect of different design factors (type and geometry of the heat transfer element, airflows, etc.) on the output heat-mass transfer performances and choose the optimal variants.

COST: Price not indicated.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 4 MB RAM, 2 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: The program uses a unique and elaborate math simulation algorithm to solve the task of a two-dimensional heat-mass-transfer process with changed boundaries in a cross-flow recuperative heat exchanger. A rapidly converging iteration method has been employed to solve a non-linear differential combined equation.

SOFTWARE: Indoor Humidity – Tools

SUPPLIER:
Taitem Engineering
963 Comfort Road
Spencer, NY 14883
USA
Web site:
Mr. Ian Shapiro, P.E.
Telephone: (607) 277-1118 or (800) 216-5638
Fax: (607) 277-2119
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: Software for Indoor Humidity analysis.

COST: US$495

HARDWARE: IBM compatible 486 or pentium processor, Windows 3.X/ NT/95. Available on 3.5 inch disk.

COMMENTS: Available summer 1997.

SOFTWARE: InSite Energy Service Marketing System

SUPPLIER:
XENERGY Inc.
Three Burlington Woods
Burlington, MA 01803-4543
USA
Web site:
Ms. Catherine Owens
Telephone: (617) 273-5700
Fax: (617) 229-4867
E-mail:

SECTOR: Industrial/Commercial

TYPE: Database

DETAIL: Complex

DESCRIPTION: A Windows-based energy evaluation and marketing information system. It helps evaluate base-case energy use of individual systems or a full facility. It provides recommendations for system modifications, including fuel switching. It generates reports of flexible type.

COST: US$3000

HARDWARE: IBM compatible 486 or higher, Windows 3.X, minimum 4 MB RAM, 40 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: The system is used primarily by utility marketing and industrial/commercial service providers, and energy service companies.

SOFTWARE: ISOLDE

SUPPLIER:
CENERGIA
Sct . Jacobsvej 4
Ballerup 2750
Denmark
Web site:
Mr. Ove Morck
Telephone: +45-44-660-099
Fax: +45-44-660-136
E-mail:

SECTOR: Commercial

TYPE: Performance

DETAIL: Simple

DESCRIPTION: ISOLDE is a design tool that provides:
1. Inspiration through example buildings
2. Guidance for design at passive and hybrid heating, cooling and daylighting technologies
3. Simple calculation tools

COST: US$500

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 4 MB hard disk. Available on CD-ROM.

COMMENTS:

SOFTWARE: ISTUM-PC, Intra-Sectoral Technology Use Model for the PC

SUPPLIER:
Energy Research Group
School of Resource and Environmental Management
Simon Fraser University
Burnaby, BC
V5A 1S6
Web site:
Mr. John Nyboer
Telephone: (604) 291-3068
Fax: (604) 291-4968
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: ISTUM-PC is a second generation end-use model. It consists of many sub-models – one for each region (province) and industry or sector combination. It simulates technology evolution through equipment retirement and changing demand (e.g., due to economic growth) leading to new purchases. Life-cycle cost is the main determinant of new technology purchases, but other factors can also affect the purchase decision. A probability distribution is used to distribute purchases among competing technologies. Energy consumption is then determined based on the energy use of the total stock of purchased equipment.

COST: The model software and sub-model databases are available free of charge. However, the model requires Lotus-123 for Windows and may require APL software if the users want to change the flow diagram structure. APL software will likely cost around $1000.

HARDWARE: IBM compatible 386 or higher, Windows 3.X, minimum 4 MB RAM, 40 MB hard disk space. Needs Lotus-123 and may need APL.

COMMENTS: This software has been used for studies commissioned by BC Hydro, Natural Resources Canada, and Centra Gas Ltd. for looking at the potential for energy conservation at a detailed level.

SOFTWARE: **IWR-Main, Water Demand Analysis Software**

SUPPLIER:
Planning and Management Consultants Ltd.
P. O. Box 1316
Carbondale, IL 62903
USA
Web site: http://www.pmcl.com
Dr. Eva Opitz
Telephone: (618) 549-2832
Fax: (618) 539-3188
E-mail: webmaster@pmcl.com

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Simple/Complex

DESCRIPTION: A software tool for preparing water demand forecasts and for conducting water savings analyses of conservation measures.

COST: US$895

HARDWARE: IBM compatible 386 or higher, DOS 5.0 or greater, minimum 640 KB RAM, 15 MB hard disk space.

COMMENTS: Hands-on training available. Branch-specific IWRAPS tool for Army, Air Force, Navy, and Marine Corps installations are available.

SOFTWARE: **IWRAPS, Installation Water Resources Analysis and Planning System**

SUPPLIER:
Planning and Management Consultants Ltd.
P. O. Box 1316
Carbondale, IL 62903
USA
Web site: http://www.pmcl.com
Ms. Nancy A. Hanna-Sommers, Program Manager
Telephone: (618) 549-2832
Fax: (618) 539-3188
E-mail: webmaster@pmcl.com

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Intermediate

DESCRIPTION: Designed to support water utility planning for fixed military installations, IWRAPS generates seasonally and sectorially desegregate water requirements estimates. IWRAPS has the capability to analyse the effects of mobilization and conservation scenarios on future water requirements.

COST: Not applicable. Provided for applications to support water requirement studies.

HARDWARE: IBM compatible 386 or higher, DOS 5.0 or greater, minimum 640 KB RAM, 2 MB hard disk space.

COMMENTS: Hands-on training available. Branch-specific IWRAPS tool for Army, Air Force, Navy, and Marine Corps installations are available.

SOFTWARE: Load 700

SUPPLIER:
C.D.S. – The Trane Company
3600 Pammel Creek Road
La Crosse, WI 54601-7599
USA
Web site: http://www.trane.com
Mr. Clair Jacobson
Telephone: (608) 787-3926
Fax: (608) 787-3005
E-mail: CDSHELP@trane.com

SECTOR: Industrial/Commercial

TYPE: Simulation

DETAIL: Simple/Complex

DESCRIPTION: Performing iterative cooling and heating load calculations is one of the most common and time-consuming tasks HVAC designers face. To improve the accuracy and efficiency of this task, Load 700 combines the power-building load and design portion of TRACE 600 with the simplicity of a Windows-based operating environment. It uses ASHRAE Algorithms to assure calculation integrity. Users can edit building construction details in any order and easily change the building model as the design progresses for "what-if" analysis. Two distinct levels of data entry permit either quick calculation of a building's load or modelling of complex building geometries and systems. Extensive libraries of predefined (but editable) templates of construction materials and building load information increases the speed and accuracy of the modelling process. Load 700 automatically creates detailed reports of entered data and calculation results. The file can be exported to Trace 600 for a detailed energy analysis.

COST: US$795

HARDWARE: IBM compatible 486 or higher, with math co-processor, running Windows 3.1/95, minimum 8 MB RAM, 10 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: Load Express

SUPPLIER:
C.D.S. – The Trane Company
3600 Pammel Creek Road
La Crosse, WI 54601-7599
USA
Web site: http://www.trane.com
Mr. Clair Jacobson
Telephone: (608) 787-3926
Fax: (608) 787-3005
E-mail: CDSHELP@trane.com

SECTOR: Commercial

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: Load Express is an easy-to-use Windows-based load design program for light commercial buildings. Beginners will appreciate the program's graphical interface, minimal entries and libraries of predefined building elements such as walls and roofs. Additional elements can be created as needed. Program calculations as based on ASHRAE-approved algorithms, and the results are documented in reports that detail the expected cooling load, heating load and airflow capacity. All zone information is summarized on one screen for easy review.

COST: US$295

HARDWARE: IBM compatible 486 or higher, with math co-processor, running Windows 3.1 or higher, minimum 4 MB RAM, 16 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Demo available. New version 2.1.

SOFTWARE: MarketManager

SUPPLIER:
Optimum Energy Products Ltd.
47 Millside Way SW
Calgary, AB
T2Y 2N4
Web site: www.optimumenergy.com/
Mr. Grant Meadows
Telephone: (403) 256-3636
Fax: (403) 256-9099
E-mail: grantm@optimumenergy.com

SECTOR: Industrial/Commercial

TYPE: Database

DETAIL: Complex

DESCRIPTION: An energy analysis and simulation tool to model existing buildings and facilities and associated energy use. It simulates energy management retrofits, various utility rates and options to determine savings potential. It includes complete data libraries, rate analysis reporting and on-line help.

COST: C$3495

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 8 MB RAM, 30 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Integrates with METRIX software, separately described.

SOFTWARE: METER EXECUTIVE

SUPPLIER:
Elemco Building Controls, Inc.
1324 Motor Parkway, Suite 112
Hauppauge, NY 11788
USA
Web site:
Mr. Zachary Stern
Telephone: (516) 582-8266
Fax: (516) 582-5329
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Performance

DETAIL: Complex

DESCRIPTION: Real-time sub-metering of electricity, water, gas, Btu, etc. All data stored in standard Microsoft MDB format.

COST: US$3500

HARDWARE: IBM compatible pentium or higher, Windows NT/95, minimum 32 MB RAM, 50 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: METRIX Energy Accounting System

SUPPLIER:
Optimum Energy Products Ltd.
47 Millside Way SW
Calgary, AB
T2Y 2N4
Web site: www.optimumenergy.com/
Mr. Grant Meadows
Telephone: (403) 256-3636
Fax: (403) 256-9099
E-mail: grantm@optimumenergy.com

SECTOR: Industrial/Commercial

TYPE: Database

DETAIL: Complex

DESCRIPTION: METRIX allows the user to track all types of utility costs (gas, electricity, water) for any number of buildings or facilities. It allows users to set up baseline usage patterns, account for energy management measures and track actual energy used vs. baselines and predictions. It is a powerful tool to help facility managers, energy managers, or other personnel who manage and report energy use. Many energy service companies (ESCOs) have standardized it for energy reporting for their various projects.

COST: C$3495

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 8 MB RAM, 20 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Integrates with MarketManager software, separately described.

SOFTWARE: MOIST 2.1

SUPPLIER:
National Institute of Standards and Technology (NIST)
Room B320, Building 226
Gaithesburg, MD 20899-0001
USA
Web site:
Mr. Doug Burch
Telephone: (301) 975-6433
Fax: (301) 975-5433
E-mail: dburch@mailserver.nist.gov

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL Complex

DESCRIPTION: Predicts heat and moisture transfer in building walls, flat roofs, and cathedral ceilings.

COST: Available free of charge.

HARDWARE: IBM compatible 286 or higher, with a math co-processor, minimum 512 KB RAM, 2 MB (preferably 5 MB) hard disk.

COMMENTS: Windows version will be released on or about September 1, 1997.

SOFTWARE: Motor Master+ Version 1.0

SUPPLIER:
Washington State University
925 Plum St. SE, Suite #4
P.O. Box 43165
Olympia, WA 98504-3165
USA
Web site:
Motor Challenge Hotline
Telephone: (800) 862-2086
Fax: (360) 956-2217
E-mail:

SECTOR: Industrial/Commercial

TYPE: Performance/Simulation/Database

DETAIL: Complex

DESCRIPTION: Allows users to list electric motors from a database of over 10000 NEMA Design B motors to determine life-cycle cost analysis, energy-efficient replacements, energy accounting, conservation savings, assessments and program evaluation.

COST: US$75. Must register as International Affiliate.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 8 MB RAM, 15 MB hard disk space. Available on 3.5 inch disks.

COMMENTS: Version 2.0 is available.

SOFTWARE: PACO CALC

SUPPLIER:
Paco Pumps
800 Koomey Road
Brookshire, TX 77423
USA
Web site:
Ms. Cheryl Parker-Reznicek
Telephone: (281) 934-6224
Fax: (281) 934-6090
E-mail:

SECTOR: Industrial/Commercial

TYPE: Database/Spreadsheet

DETAIL: Simple

DESCRIPTION: This program allows operating cost comparisons, bolt stress, orifice sizing and other pump-related engineering calculations.

COST: Available free of charge.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/95, minimum 2 MB RAM, 5 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: PACO DXF/PACO CAD

SUPPLIER:
Paco Pumps
800 Koomey Road
Brookshire, TX 77423
USA
Web site:
Ms. Cheryl Parker-Reznicek
Telephone: (281) 934-6224
Fax: (281) 934-6090
E-mail:

SECTOR: Industrial/Commercial

TYPE: Database/Spreadsheet

DETAIL: Simple

DESCRIPTION: This program provides AUTOCAD drawings and specifications in DXF format for incorporation into other documents.

COST: Available free of charge.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/95, minimum 4 MB RAM, 8 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Requires AUTOCAD Version 11.

SOFTWARE: PACO SELECT

SUPPLIER:
Paco Pumps
800 Koomey Road
Brookshire, TX 77423
USA
Web site:
Ms. Cheryl Parker-Reznicek
Telephone: (281) 934-6224
Fax: (281) 934-6090
E-mail:

SECTOR: Industrial/Commercial

TYPE: Database

DETAIL: Simple

DESCRIPTION: This program provides simple pump selection, system-curve development, and operating cost analysis for fixed and variable speed, single and multiple pumping systems.

COST: US$150. Available free of charge to potential/existing customers.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/95, minimum 2 MB RAM, 10 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Requires AUTOCAD Version 11.

SOFTWARE: PEAR, Program for Energy Analysis of Residences

SUPPLIER:
Lawrence Berkeley National Laboratory
1 Cyclotron Road, MS 90-2000
Berkeley, CA 94720
USA
Web site:
Mr. Joe Huang
Telephone: (510) 486-7082
Fax: (510) 486-4673
E-mail: YJHuang@lbl.gov

SECTOR: Residential

TYPE: Simulation/Database

DETAIL: Simple

DESCRIPTION: PEAR computes annual heating and cooling energy consumption of new housing anywhere in the United States based on a large database of DOE-2.1A simulations of typical construction in 45 U.S. locations.

COST: Available free of charge

HARDWARE: IBM compatible, running MS-DOS.

COMMENTS: Database generated in 1983 for U.S. Department of Energy and covers only U.S. climates and housing types.

SOFTWARE: PREP

SUPPLIER:
ITEM Systems
321 High School Road, Suite 344
Bainbridge Island, WA 98110
USA
Web site: http://www.halcyon.com/byrne
Mr. Steve Byrne
Telephone: (206) 855-9540
Fax: (206) 855-9541
E-mail: byrne@item.com

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: PREP is a batch preprocessor that is designed to facilitate execution of multiple parametric simulations of DOE-2, BLAST, or any other program that uses a text input file. PREP provides conditional text substitution, expression evaluation, macro definition, and the ability to spawn operating system commands and other programs. PREP can optionally be used to spawn the execution of the simulation program itself, so a large series of parametric runs can be controlled by a single batch file containing just one line for each. PREP uses syntax that is common to many preprocessors, including C and Fortran.

COST: US$495

HARDWARE: IBM compatible 386 or higher, Windows 3.X/NT/95, minimum 4 MB RAM, 10 MB hard disk space.

COMMENTS: Brochure and Demo available at http://www.halcyon.com/byrne.

SOFTWARE: PUMP PRO

SUPPLIER:
Paco Pumps
800 Koomey Road
Brookshire, TX 77423
USA
Web site:
Ms. Cheryl Parker-Reznicek
Telephone: (281) 934-6224
Fax: (281) 934-6090
E-mail:

SECTOR: Industrial/Commercial

TYPE: Database

DETAIL: Simple

DESCRIPTION: This program provides simple selection of pump dimensions.

COST: Available free of charge.

HARDWARE: IBM compatible 486 or higher, Windows 3.X, minimum 4 MB RAM, 5 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: QBLCC, Quick Building Life-Cycle Cost

SUPPLIER:
National Institute of Standards and Technology (NIST)
Office of Applied Economics
Building 226, Room B226
Gaithesburg, MD 20899
USA
Web site: www.eren.doe.gov/femp/ (Technical Assistance, Analytical Software Tools)
Ms. Sieglinde Fuller
Telephone: (301) 975-6134
Fax: (301) 208-6936
E-mail: fullers@mailserver.nist.gov

SECTOR: Industrial/Commercial/Residential

TYPE: Performance

DETAIL: Simple

DESCRIPTION: The QBLCC computer program (included with BLCC) can be used to set up multiple project alternatives for life-cycle cost analysis in a single input file. It is a convenient method for solving relatively exclusive alternatives for the same project. Net Savings and Savings-to-Investment-Ratio are also calculated. Default discount rates and energy price projections by the U.S. Department of Energy are updated annually in April.

COST: Available free of charge.

HARDWARE: IBM-PC or compatible microcomputer, DOS 3.0 or higher, 640K RAM, 1.2 MB hard disk space. Can be run from Windows 3.X.

COMMENTS: To obtain a copy of BLCC, please call 1-800-DOE-EREC or download from www.eren.doe.gov/femp/ (Technical Assistance, Analytical Software Tools). Type QBLCC4.EXE to unzip.

SOFTWARE: RADIANCE

SUPPLIER:
Lawrence Berkeley National Laboratory
1 Cyclotron Road, MS 90-3111
Berkeley, CA 94720
USA
Web site: http://radsite.lbl.gov/adeline
Mr. Charles Ehrlich
Telephone: (510) 486-4757
Fax: (510) 486-4089
E-mail: ckehrlich@lbl.gov.

SECTOR: Industrial/Commercial/Residential

TYPE: Performance/Simulation

DETAIL: Complex

DESCRIPTION: RADIANCE is a suite of programs for the UNIX platform (or DOS with ADELINE). The main programs use a ray-tracing technology to predict the distribution of light in scenes of arbitrary complexity. Uses include workplane illuminance, surface exitance and glare, and true colour, high resolution, photographic quality renderings. Translators for a variety of 3D CAD formats are available. Provided in source code only and compiles on a wide variety of hardware platforms.

COST: Version 3.0 is free; 3.1 is to be determined. Free version for non-commercial use only.

HARDWARE: Any computer hardware capable of running a 32 bit Unix operating system, including an Intel-based workstation running Linux. Minimum memory is 16 MB with 32 MB recommended and more as the complexity of the scene increases. Disk space: 20 MB plus project working space.

COMMENTS: Software has a very steep learning curve and has only a rudimentary user interface based on the Tcl/Tk X11 programming interface. Software is highly customizable due to its command-line structure. For further information, please visit our web site or e-mail Charles Ehrlich.

SOFTWARE: RateProfiler

SUPPLIER:
Optimum Energy Products Ltd.
47 Millside Way SW
Calgary, AB
T2Y 2N4
Web site: www.optimumenergy.com/
Mr. Grant Meadows
Telephone: (403) 256-3636
Fax: (403) 256-9099
E-mail: grantm@optimumenergy.com

SECTOR: Industrial/Commercial

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: RateProfiler allows users to quickly compare load profiles to various utility rate and tariff structures. Developed by Quantum Consulting, it also offers RateBase, an optional database of over 500 U.S. and Canadian rates. It has many data import options and can also directly interface with many electric meters.

COST: C$7000

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 8 MB RAM, 30 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Built-in RateWizard gives, through development and entry, even the most complex rate schedules. Graphic and tabular "what-if" scenarios are instantly available.

SOFTWARE: REAP-Lighting 2.1

SUPPLIER:
Department of Energy and Forestry
P.O. Box 2000
Charlottetown, PEI
C1A 7N8
Web site:
Mr. Mike Proud
Telephone: (902) 368-5010
Fax: (902) 368-6582
E-mail:

SECTOR: Industrial/Commercial

TYPE: Database

DETAIL: Simple

DESCRIPTION: This program has an imbedded database for light fixtures, ballasts, tubes, and lenses. It uses a simple field input of fixture types and quantities to determine present use and most efficient use of fixtures to provide user-defined levels of illumination in industrial and commercial facilities. Using a cost database with default numbers, detailed material lists and bills of material can be prepared for each ECM.

COST: Available free of charge for Canadian companies. Negotiated licence can be arranged for North America or Europe.

HARDWARE: IBM PC or compatible with 640 KB minimum RAM. Recommended PC-AT with 1 MB RAM. Required 4 MB hard disk space, math co-processor and colour monitor. Program provided on 3.5 inch disk, with a self-extracting compressed file REAP21.EXE.

COMMENTS: Software assistance available through Richardson Associates at (902) 566-4044 or fax at (902) 566-4989. IES calculations used for lighting quality analysis of current and proposed lighting equipment.

SOFTWARE: REEP, Renewable and Energy Efficiency Planning

SUPPLIER:
Army Corps of Engineers
Construction Engineering Research Laboratory
2902 Farber Drive
Champaign, IL 61826-9005
USA
Web site: http://www.cecer.army.mil/reep/reep.html
Mr. Robert Nemeth or Mr. Lee DeBaillie
Telephone: (217) 352-6511
Fax: (217) 373-3430
E-mail: r_nemeth@cecer.army.mil

SECTOR: Industrial/Commercial/Residential

TYPE: Performance/Simulation/Database/Spreadsheet

DETAIL: Simple/Complex

DESCRIPTION: The program may be used to evaluate energy savings, economics and pollution-abatement of various building retrofit technologies.

COST: Available free of charge. Send a fax to (217) 373-3430, or download the program from the web site.

HARDWARE: Will run on most PCs with Windows operating system.

COMMENTS: This program is more of a scoping tool than anything else. It should not be used to analyse individual building-specific retrofits.

SOFTWARE: Resource Manager

SUPPLIER:
EPS Solutions, Inc.
261 School Ave.
Excelsior, MN 55331
USA
Web site:
Ms. Karen Tarter
Telephone: (612) 473-1303
Fax: (612) 473-1466
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Performance/Database

DETAIL: Complex

DESCRIPTION: Benefit/Cost evaluation of retail electric and non-electric energy-related decisions. Capability to model both utility and customers. Results shown from different perspectives.

COST: US$10,000 for first year, US$5000 for additional years. Perpetual licence available.

HARDWARE: IBM compatible pentium or higher, Windows 95, minimum 16 MB RAM, 30 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: Right-Suite for Windows

SUPPLIER:
Wrightsoft Corporation
394 Lowell Street
Lexington, MA 02173
USA
Web site: www.wrightsoft.com
Mr. Kevin Parse
Telephone: (800) 225-8697
Fax: (617) 861-2058
E-mail: adirado@wrightsoft.com

SECTOR: Commercial/Residential

TYPE: Performance

DETAIL: Simple

DESCRIPTION: Right-Suite for Windows is a fully integrated HVAC design program. It combines five major functions of HVAC calculations: load estimation, duct sizing, energy analysis, job quotations and geothermal loop design. It incorporates Wrightsoft's five highly acclaimed programs into a single program shell:

Right-J:	ACCA's Manual J Load Calculations
Right-D:	ACCA's Manual D Duct Sizing Software
Right-$:	Powerful Energy Analysis Software
Right-Quote:	Quick, easy Proposals and Quotations
Right-Loop:	Geothermal Loop Design

Wrightsoft has developed design software in partnership with the Air Conditioning Contractors of America (ACCA) since 1985.

COST: US$299-$1299

HARDWARE: IBM compatible 386 or higher, Windows 3.X/NT/95, minimum 8 MB RAM, 6 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Will begin to ship in second quarter of 1997.
Unlimited technical support.

SOFTWARE: SavePlus

SUPPLIER:
Baldor Electric Company
P.O. Box 2400
Fort Smith, AR 72902
USA
Web site:
Ms. Alida Collier
Telephone: (501) 646-4711
Fax: (501) 648-5792
E-mail:

SECTOR: Industrial

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: SavePlus will estimate cost savings on motors only or motors when applied with adjustable speed drives.

COST: Available free of charge.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/95, minimum 8 MB RAM, 9 MB hard disk space. Available on CD-ROM.

COMMENTS: Comes as a part of a CD-ROM catalogue.

SOFTWARE: **SERIRES, Solar Energy Research Institute Residential Energy Software**

SUPPLIER:
National Renewable Energy Laboratory
1617 Cole Boulevard
Golden, CO 80401
USA
Web site:
Mr. Ron Judkoff
Telephone: (303) 384-7520
Fax: (303) 384-7411
E-mail: JudkoffR@toplink.nrel.gov

SECTOR: Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: A general purpose thermal analysis program for residential buildings. The solution approach is a thermal network using a combination of forward finite differencing, Jacobian iteration and constrained optimization. The program uses time steps of one hour or less. It treats the building fabric in detail. It needs thermal-physical and optical properties of the building, along with a simplified geometric description. It provides outputs of temperatures and energy flows at hourly, daily, weekly, monthly or yearly integrations. It performs dynamic modelling of building fabric for passive solar heat calculations.

COST: Not indicated.

Mainframe version available from:
Energy Science and Technology Centre
P.O. Box 1020, Oak Ridge, TN 37831, USA.
Tel: (423) 576-2606.
SUNCODE-PC 5.7 (a private sector PC version) available from:
Kaija Berleman, Ecotope, Inc., 2812 East Madison Street
Seattle, WA 98112, USA. Tel: (206) 322-3753, Fax: (206) 325-7270.

HARDWARE: Mainframe or IBM compatible PC.

COMMENTS:

SOFTWARE: SHADOWS (DOS)

SUPPLIER:
Tait Solar Co., Inc.
51 West 13th Street
Tempe, AZ 85281
USA
Web site:
Mr. David Tait
Telephone: (602) 829-8422
Fax: (602) 829-8619
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: SHADOWS predicts the length and direction of shadows cast by buildings, landscaping, or any other object. Its flexible reporting system produces hourly values throughout the year. It generates professional quality reports or saves the data for use by other programs.

COST: US$59

HARDWARE: IBM compatible, DOS. Program available on 3.5 inch disk.

COMMENTS:

SOFTWARE: SitePro

SUPPLIER:
Regional Economic Research, Inc.
12520 High Bluff Drive, Suite 220
San Diego, CA 92130
USA
Web site: www.rer.com
Mr. Bob Ramirez
Telephone: (619) 481-0081
Fax: (619) 481-7550
E-mail:

SECTOR: Industrial/Commercial

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: SitePro is designed to translate on-site survey data into hourly load shapes for individual sites. SitePro embodies estimation and reconciliation algorithms developed, refined and tested over the last decade.

COST: Variable. Only custom applications.

HARDWARE: IBM compatible, running Windows NT/95. Available on 3.5 inch disk and CD-ROM.

COMMENTS: This is a research-grade software and as such is only available for custom applications, typically large-scale commercial surveys for electric utilities.

SOFTWARE: **SPARK, Simulation Problem Analysis and Research Kernel**

SUPPLIER:
Lawrence Berkeley National Laboratory
1 Cyclotron Road, MS 90-3147
Berkeley, CA 94720
USA
Web site:
Ms. Kathy Ellington
Telephone: (510) 486-5711
Fax: (510) 486-4089
E-mail:

SECTOR: Commercial/Residential

TYPE: Performance/Simulation

DETAIL: Complex

DESCRIPTION: Object-oriented simulation environment for complex building systems. Users graphically connect calculation modules from a library to form customized simulations of arbitrary complexity. Users can create their own calculation modules by entering equations symbolically — no programming required. User-selectable simulation timestep. Aimed primarily at simulation of HVAC systems and controls, but also applicable to detailed envelope heat transfer calculations.

COST: To be determined. Will be available at the end of 1997.

HARDWARE: For PCs: 486 or higher, Windows 95 or NT, 8 MB memory, 20 MB disk.
For Unix Workstations: SunOS or Solaris, 8 MB memory, 20 MB disk.

COMMENTS:

SOFTWARE: Superlite 2.0

SUPPLIER:
Lawrence Berkeley National Laboratory
Buildings Technologies Program – EET Division
1 Cyclotron Road, MS 90-3111
Berkeley, CA 94720
USA
Web site: http://eande.lbl.gov/BTP/WDG/SUPERLITE/superlite2.html
Dr. Robert Hitchcock
Telephone: (510) 486-4154
Fax: (510) 486-4089
E-mail: RJHitchcock@lbl.gov

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: Superlite 2.0 is a lighting analysis program designed to accurately predict interior illuminance in complex building spaces due to daylight and electric-lighting systems. Superlite enables a user to model interior daylight levels for any sun and sky condition in spaces having windows, skylights or other standard fenestration systems. The principal new feature of Version 2.0 is the capability to calculate electric-lighting levels in addition to the daylighting prediction. This allows lighting performance simulation for integrated lighting systems. Daylighting and electric lighting systems can also be modelled separately. The program calculates lighting levels on all interior surfaces, as well as on planes that can be arbitrarily positioned to represent work surfaces or other locations of interest to the user. Superlite 2.0 is intended to be used by researchers and lighting designers, who require detailed analysis of the illuminance distribution in architecturally complex spaces.

COST: Software and documentation free of charge, distributed through the web site.
Copyright A9 1994 Regents of the University of California – Lawrence Berkeley National Laboratory.

HARDWARE: IBM compatible running MS-DOS with minimum 640 KB RAM and 1 MB of hard disk. (Not capable of using extended memory.)

COMMENTS:

SOFTWARE: System Analyzer

SUPPLIER:
C.D.S. - The Trane Company
3600 Pammel Creek Road
La Crosse, WI 54601-7599
USA
Web site: http://www.trane.com
Mr. Clair Jacobson
Telephone: (608) 787-3926
Fax: (608) 787-3005
E-mail: CDSHELP@trane.com

SECTOR: Commercial

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: System Analyzer performs load calculations and allows the user to generate and present energy and economic analyses, with little or no HVAC training. Experienced designers can use the program as a tool to quickly and easily examine different systems and assess the impact of control strategies such as night setback, demand limiting and optimum start/stop. If a particular combination of equipment appears promising, TRACE 600 can be used to conduct a more detailed analysis. Rather than requiring detailed building entries like TRACE, System Analyzer is based on simplifying assumptions that expedite the comparisons of virtually any building, system and equipment combination. The program models many of the advanced HVAC options and includes a library of predefined building and equipment templates that are readily customized. System Analyzer generates reports that include graphs.

COST: US$995

HARDWARE: IBM compatible 386 or higher, with math co-processor, running Windows 3.1 or higher, minimum 4 MB RAM, 10 MB hard disk space. Available on 3.5 inch disk.

COMMENTS:

SOFTWARE: T-DUCT

SUPPLIER:
Netsal & Associates
16182 Mt. Lowe Circle
Fountain Valley, CA 92708
USA
Web site:
Dr. Robert Tsal
Telephone: (714) 531-2960
Fax: (714) 531-2960
E-mail: netsal@mail.apc.net

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: T-DUCT operates numerical models of duct systems. The program will design and evaluate the performance of a fan/duct system under various conditions, adjust the fan performance point, and display actual airflow, velocity, pressure, and mass flow rate.

COST: US$495

HARDWARE: IBM compatible, running DOS, minimum 640 KB RAM, 3 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Free Demo, play what-if scenarios, large fittings library.

SOFTWARE: TEAM Software

SUPPLIER:
Energy Auditing Agency
34 The Forum, Rockingham Drive
Linford Wood, Milton Keynes MK14 6LY
UK
Web site:
Mr. John Collinge
Telephone: +441-908-690-018
Fax: +441-908-690-019
E-mail:

SECTOR: Industrial/Commercial

TYPE: Simulation/Database

DETAIL: Complex

DESCRIPTION: TEAM is energy monitoring and targeting software. It saves client between 5% and 25% of their annual fuel bill by bill verification, automatic monitoring of energy use, reducing administration, and using standards for example.

COST: US$575 and up.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 8 MB RAM, 50 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Energy Auditing Agency has been developing and selling monitoring and targeting software for 14 years and is the largest developer of this type of software in the world.

SOFTWARE: Thermal Energy Storage Spreadsheet

SUPPLIER:
Energy Resource Associates
1626 Holmes St.
Livermore, CA 94550
USA
Web site:
Mr. James P. Waltz
Telephone: (510) 447-1140
Fax: (510) 447-1706
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation/Spreadsheet

DETAIL: Simple

DESCRIPTION: This is a LOTUS 123 Template used to simulate chiller plants and thermal energy storage systems.

COST: US$250

HARDWARE: IBM compatible, DOS 2.1 or higher, minimum 512 KB RAM, 1.44 MB disk drive, and wide carriage parallel printer. Available on 3.5 inch disk. Needs LOTUS 123.

COMMENTS:

SOFTWARE: TRACE 600

SUPPLIER:
C.D.S. - The Trane Company
3600 Pammel Creek Road
La Crosse, WI 54601-7599
USA
Web site: http://www.trane.com
Mr. Clair Jacobson
Telephone: (608) 787-3926
Fax: (608) 787-3005
E-mail: CDSHELP@trane.com

SECTOR: Industrial/Commercial

TYPE: Simulation

DETAIL: Simple/Complex

DESCRIPTION: TRACE 600 is a powerful load calculation and energy analysis software. It has been developed for design professionals. It uses ASHRAE algorithms to quickly and accurately perform load, system, equipment, and economic analysis. It analyses life-cycle costs to evaluate various combinations of alternatives in building envelope construction, HVAC system design/operation, equipment choices and control strategies.

COST: US$1795

HARDWARE: IBM compatible 286 or higher, with math co-processor, running DOS 3.1 or higher, minimum 640 KB RAM, 10 MB hard disk space for the program and 6–10 MB for run-time files. Available on 3.5 inch disk.

COMMENTS: TRACE 600 includes TRACE EASY.

SOFTWARE: **UBAS, Utility Bill Accounting System**

SUPPLIER:
General Energy Technologies
100 Via Quito, P.O. Box 2178
Newport Beach, CA 92663
USA
Web site:
Mr. David Farrell
Telephone: (714) 673-4222
Fax: (714) 673-4122
E-mail: dfarrell@nbonline.com or getc.nbonline.com

SECTOR: Industrial/Commercial/Residential

TYPE: Performance/Simulation/Database

DETAIL: Complex

DESCRIPTION: UBAS tracks and analyses utility bills each month with as much historic data as desired. UBAS is the foundation for the Energy Conservation Analysis System (ECAS), described separately. UBAS is a dynamic accounting system that verifies, graphs, and reports all aspects of utility costs. It pinpoints buildings using more energy than others, months in which kW demand or kWh exceed expected levels, provides comparative reports, showing statistical factors. It breaks out the per square foot costs, millions of energy and production units. It handles all types of energy on fiscal or calendar year basis, enables master and sub meters and even produces sub-meter bills.

COST: US$470 for stand alones, US$670 for small networks up to 5 stations and US$970 for large networks with any number of stations. UBAS may be purchased as a part of ECAS.

HARDWARE: IBM compatible, running Windows 3.X/95.

COMMENTS:

SOFTWARE: VisualDOE 2.5

SUPPLIER:
Eley Associates
142 Minna Street, 2nd Floo
San Francisco, CA 94105
USA
Web site: www.eley.com
Mr. John Kennedy
Telephone: (415) 957-1977
Fax: (415) 957-1381
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: VisualDOE 2.5 harnesses the power of DOE 2.1E in an easy and user-friendly manner, for architects, engineers, utilities and research institutes, through a true graphic interface to help during all phases of design. It allows users to visually create buildings with various thermal zones, in blocks, starting with two dimensions and adding the third dimension. It also provides custom-blocks for easier design. It also interfaces with CAD. Solar load, lighting and two other loads are allowed for simulation/analysis. The results on energy are also presented graphically, in addition to the usual format of reports, including hourly estimates. VisualDOE 2.5 includes DOE 2.1E and data for 16 California weather zones.

COST: US$950 for single user, US$1400 for a two-user network and US$450 for each additional user. Demonstration copy may be downloaded from the web site.

HARDWARE: IBM compatible 486 or higher, with colour monitor and mouse, Windows 3.1 or higher, minimum 8 MB RAM, 30 MB hard disk space.

COMMENTS: Eley Associates also provides training to use VisualDOE 2.5.

SOFTWARE: WATERGY

SUPPLIER:
U.S. Department of Energy
Federal Energy Management Program
EE - 90
Washington, DC 20585-0121
USA
Web site: www.eren.doe.gov/femp/ (Technical Assistance, Analytical Software Tools)
Ms. Ashley Houston
Telephone: (202) 586-5772 or (303) 384-7412
Fax: (202) 586-3000 or (303) 384-7411
E-mail: ashley_houston@nrel.gov

SECTOR: Commercial

TYPE: Spreadsheet

DETAIL: Simple

DESCRIPTION: WATERGY is a simple spreadsheet model that screens sites for potential water conservation opportunities and illustrates the energy savings that result from water conservation activities. The user inputs site-specific data including utility bill information, water usage, water, sewer, treatment and energy costs, and numbers and kinds of water-using fixtures. The program then gives the user various conservation opportunities, the direct and indirect water and energy savings from these options, costs, and the payback periods.

COST: Available free of charge. The software can be obtained by calling the Energy Efficiency & Renewable Energy Clearinghouse at 1-800-DOE-EREC or at the web site.

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 4 MB RAM, 2 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: Note that the U.S. Department of Energy has another web site called Building Energy Tools Directory: www.eren.doe.gov/buildings/tools_directory/

SOFTWARE: WATSIM 1.0

SUPPLIER:
Electric Power Research Institute (EPRI) Water Heating Information Office
1720 Peachtree Road, Suite 584
Atlanta, GA 30309
USA
Web site: http://www.epriwhio.com
Mr. Don Abrams
Telephone: (404) 874-3922
Fax: (404) 874-7417
E-mail: whio@epriwhio.com

SECTOR: Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: WATSIM uses a highly detailed multi-zone model to simulate the performance of water-heating systems. WATSIM allows precise sizing of commercial systems and includes the capability to simulate the diversified demand for 300 households.

COST: US$495

HARDWARE: IBM compatible, running DOS, minimum 512 KB RAM, 10 MB hard disk space.

COMMENTS:

SOFTWARE: WATSMPL 1.0

SUPPLIER: Electric Power Research Institute (EPRI) Water Heating Information Office
1720 Peachtree Road, Suite 584
Atlanta, GA 30309
USA
Web site: http://www.epriwhio.com
Mr. Don Abrams
Telephone: (404) 874-3922
Fax: (404) 874-7417
E-mail: whio@epriwhio.com

SECTOR: Commercial/Residential

TYPE: Simulation

DETAIL: Complex

DESCRIPTION: WATSMPL is a user-friendly, Windows-based software package for examining fundamental energy flows and costs in storage water heaters. The graphical interface allows simple comparison of system alternatives.

COST: US$150

HARDWARE: IBM compatible, running Windows 3.X, minimum 8 MB RAM, 6 MB hard disk space.

COMMENTS: Will run under Windows NT/95.

SOFTWARE: WATTSUN Version 5.5

SUPPLIER:
Washington State University
925 Plum St. SE, Suite #4
P.O. Box 43165
Olympia, WA 98504-3165
USA
Web site:
Mr. Chuck Murray
Telephone: (360) 956-2157
Fax: (360) 956-2217
E-mail:

SECTOR: Residential

TYPE: Performance/Simulation

DETAIL: Simple

DESCRIPTION: Documents compliance for Washington, Oregon, Montana and Idaho Energy Codes. WATTSUN evaluates options for insulation, building tightness, passive solar applications and heating system efficiency.

COST: US$100

HARDWARE: IBM compatible 486 or higher, DOS, minimum 640 KB RAM, 2 MB hard disk space.

COMMENTS: Version 6.0 is being developed for use in all of the United States. This Windows-based version will be available in 1998.

SOFTWARE: WINLCCID 96

SUPPLIER:
BLAST Support Office, University of Illinois
1206 W. Green St., 30 Mechanical Engineering Building
Urbana, IL 61801
USA
Web site:
Dr. Daniel Fisher
Telephone: (217) 333-3977
Fax: (217) 244-6534
E-mail:

SECTOR: Commercial

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: This program is used to perform economic analysis of various building alternatives, according to the approved U.S. Department of Defence procedures.

COST: US$295

HARDWARE: IBM compatible 486 or higher, Windows 3.X/NT/95, minimum 4 MB RAM, 2 MB hard disk space. Available on 3.5 inch disk.

COMMENTS: This is an updated LCCID to use Windows environment. WINLCCID uses a new navigation scheme for ease of use by new or experienced users. The on-line help feature provides easy access to the latest program information

SOFTWARE: winSARC (Windows)

SUPPLIER:
Tait Solar Co., Inc.
51 West 13th Street
Tempe, AZ 85281
USA
Web site:
Mr. David Tait
Telephone: (602) 829-8422
Fax: (602) 829-8619
E-mail:

SECTOR: Industrial/Commercial/Residential

TYPE: Simulation

DETAIL: Simple

DESCRIPTION: winSARC is an easy-to-use, menu-driven program to generate average-day solar values instead of clear sky. It includes data for 248 cities with an option to add data for additional cities. It assists in the analysis of active/passive solar and fenestration.

COST: US$149

HARDWARE: IBM compatible, Windows 3.X/NT/95. Program available on 3.5 inch disk.

COMMENTS:

SOFTWARE: ZIP

SUPPLIER:
National Institute of Standards and Technology (NIST)
Office of Applied Economics
Building 226, Room B226
Gaithesburg, MD 20899
USA
Web site: www.eren.doe.gov/femp/ (Technical Assistance, Analytical Software Tools)
Ms. Sieglinde Fuller
Telephone: (301) 975-6134
Fax: (301) 208-6936
E-mail: fullers@mailserver.nist.gov

SECTOR: Residential

TYPE: Performance

DETAIL: Simple/Complex

DESCRIPTION: ZIP is a computer program for estimating the economic levels or R-values of insulation in new or existing single-family homes. The program calculates economic levels of insulation for attics; cathedral ceilings; exterior wood frame and masonry walls; ductwork or unheated spaces, slab floors, basement and crawl space walls; ductwork in unconditioned spaces; and water heaters. Site-specific estimates can be made for any location in the United States by entering the first three digits of its ZIP Code. Default energy and insulation price data can be overridden.

COST: US$15

Obtainable from FlowSoft, 5 Oak Forest Court, Saint Charles, MO 63303, USA, Telephone: (314) 441-1022, Fax: (314) 441-7752.

HARDWARE: IBM-PC or compatible microcomputer, DOS 3.0 or higher, 640K RAM, 1.2 MB hard disk space. Can be run from Windows 3.X.

COMMENTS:

Appendix

Software at a Glance

PAGE	SOFTWARE	COMPANY	COUNTRY	SECTOR			TYPE					PRICE	
				INDUSTRIAL	COMMERCIAL	RESIDENTIAL	PERFORMANCE	SIMULATION	DATABASE	SPREADSHEET	OTHERS	MIN	MAX
1	ADELINE 2.0	Lawrence Berkeley National Laboratory	USA	industrial	commercial	residential	performance	simulation				US$450	
2	AFT ARROW 1.0	Applied Flow Technology	USA	industrial	commercial	residential		simulation				NA	
3	AFT Engineering Utility Suite 1.0	Applied Flow Technology	USA	industrial	commercial	residential		simulation				US$595	
4	AFT FATHOM 2.0	Applied Flow Technology	USA	industrial	commercial	residential		simulation				US$995	
5	AFT IMPULSE 1.0	Applied Flow Technology	USA	industrial	commercial	residential		simulation				US$3995	
6	AFT Steam CALC 1.0	Applied Flow Technology	USA	industrial	commercial	residential			database			US$495	
7	Air Humid Handling Version 5.0 for Windows	Zeller Consulting Suisse	Switzerland	industrial				simulation				C$640	
8	AnalyzIR	FLIR Systems, Inc.	USA	industrial	commercial						analysis report generator	NA	
9	AUDIT for Windows 4.0	Elite Software	USA		commercial	residential		simulation				US$495	
10	aveSARC (DOS)	Tait Solar Co., Inc.	USA	industrial	commercial	residential		simulation				US$159	
11	Ballast Master	Washington State University	USA	industrial	commercial		performance		database			US$200	
12	BASECALC	CANMET Energy Technology Branch	CAN			residential		simulation				C$595	
13	BDA, Building Design adviser	Lawrence Berkeley National Laboratory	USA	industrial	commercial	residential	performance	simulation	database	spreadsheet		NA	
14	BEEM, Daylighting and other Window Energy Effects	R. A. Rundquist Associates, Inc.	USA		commercial		performance					US$50	
15	BESTEST, Building Energy Simulation Test	National Renewable Energy Laboratory	USA			residential		simulation				NA	
16	BLAST 4.0	University of Illinois	USA	industrial	commercial			simulation				US$950	
17	BLCC, Building Life-Cycle Cost	National Inst. of Standards and Tech. (NIST)	USA	industrial	commercial	residential	performance					free	
18	Building Energy Simulation Template	Energy Resource Associates	USA	industrial	commercial	residential		simulation		spreadsheet		US$250	

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				INDUSTRIAL	COMMERCIAL	RESIDENTIAL	PERFORMANCE	SIMULATION	DATABASE	SPREADSHEET	OTHERS	MIN	MAX
19	CATALOGUE	Enermodal Engineering Limited	CAN	industrial	commercial	residential			database			free	
20	C-MAX 2.0/ Centrifugal Compressor	Unicade Inc.	USA	industrial	commercial		performance	simulation				US$990+	
21	C-MAX 2.0/ Complete	Unicade Inc.	USA	industrial	commercial		performance	simulation				US$1990+	
22	C-MAX 2.0/Fan	Unicade Inc.	USA	industrial	commercial		performance	simulation				US$850+	
23	C-MAX 2.0/Pipe	Unicade Inc.	USA	industrial	commercial		performance	simulation				US$390+	
24	C-MAX 2.0/Pump	Unicade Inc.	USA	industrial	commercial		performance	simulation				US$990+	
25	COMTECH	Regional Economic Research, Inc.	USA		commercial		performance					US$950	
26	CONFTEMP (DOS)	Tait Solar Co. Inc.	USA	industrial	commercial	residential		simulation				US$399	
27	CONVEQS	Taitem Engineering	USA	industrial	commercial	residential					unit conversion	US$145	
28	COOLAID	Regional Economic Research, Inc.	USA		commercial		performance					US$895	
29	CUBS, Crisp Utility Billing System	Optimum Energy Products Ltd.	CAN	industrial	commercial				database			C$1995	
30	CYCLE_D, Vapor Compression Cycle Design Program	National Inst. of Standards and Tech. (NIST)	USA	industrial	commercial	residential			database			US$390	
31	Demand Analyzer	ITEM Systems	USA	industrial	commercial	residential		simulation				US$995	
32	DISCOUNT	National Inst. of Standards and Tech. (NIST)	USA	industrial	commercial	residential	performance					free	
33	DOE-2	Energy Science and Tech. Software Center	USA		commercial	residential	performance	simulation				US$300	US$1500
34	DOE-Plus	ITEM Systems	USA	industrial	commercial	residential		simulation				US$895	
35	ECAM LNX	ECAM Systems Inc.	CAN	industrial	commercial			simulation	database	spreadsheet		C$6000	
36	ECAMNET	ECAM Systems Inc.	CAN	industrial	commercial		performance	simulation	database	spreadsheet		C$40,000 +	
37	ECAM POWER UP	ECAM Systems Inc.	CAN	industrial	commercial			simulation	database	spreadsheet		C$12,000 +	

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				INDUSTRIAL	COMMERCIAL	RESIDENTIAL	PERFORMANCE	SIMULATION	DATABASE	SPREADSHEET	OTHERS	MIN	MAX
38	ECAS, Energy Conservation Analysis System	General Energy Technologies	USA	industrial	commercial	residential	performance	simulation	database			US$770	US$2770
39	EDAT, Electrical Data Analysis Template	Energy Resource Associates	USA	industrial	commercial	residential	performance			spreadsheet		US$100	
40	ELOG 97	Optimum Energy Products Ltd.	CAN	industrial	commercial		performance					C$129	
41	EMISS	National Inst. of Standards and Tech. (NIST)	USA	industrial	commercial	residential	performance					free	
42	ENERGY-10	Passive Solar Industries Council	USA		commercial	residential		simulation				US$250	
43	Energy Accounting Report System	Energy Resource Associates	USA	industrial	commercial	residential	performance					US$495	
44	ENERGY EXECUTIVE III	Elemco Building Controls, Inc.	USA	industrial	commercial		performance					US$2500	US$7500
45	ENERPASS	Enermodal Engineering Limited	CAN		commercial	residential		simulation				C$395	
46	EnergyPro	Gabel Dodd/EnergySoft	USA		commercial	residential	performance	simulation				NA	
47	EPLAN	Efficiency Software of Ermont, Inc.	USA	industrial	commercial	residential	performance	simulation	database	spreadsheet		US$199	
48	EPRI Rate Manager	EPS Solutions, Inc.	USA	industrial	commercial	residential			database			NA	
49	ERATES	National Inst. of Standards and Tech. (NIST)	USA	industrial	commercial	residential	performance					free	
50	EURA, Electric Utility Rate Analysis	General Energy Technologies	USA	industrial	commercial	residential	performance	simulation	database			US$270	US$670
51	FASER	Engineering Interface	CAN	industrial	commercial	residential	performance					C$3600+	
52	FEDS, Facility Energy Decision System	Battelle Pacific Northwest National Lab.	USA	industrial	commercial	residential	performance	simulation				NA	
53	FRAMEplus Toolkit	Enermodal Engineering Limited	CAN	industrial	commercial	residential		simulation				C$350	

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54	FRESA, Federal Renewable Energy Screening Assistant	National Renewable Energy Laboratory	USA	industrial	commercial	residential			database			free	
55	GATECYCLE	Enter Software, Inc.	USA	industrial			performance	simulation				US$15,000	
56	HAP, Hourly Analysis Program	Carrier Corporation	USA		commercial		performance	simulation				US$1195	
57	HIREF (DOS)	Tait Solar Co., Inc.	USA	industrial	commercial	residential		simulation				US$399	
58	HOT2000	Canadian Home Builders Association	CAN			residential		simulation				C$295	
59	HOTCALC 2.0	Electric Power Research Inst. (EPRI) Water Heating Info. Office	USA		commercial	residential		simulation				US$295	
60	HVACSIM+	National Inst. of Standards and Tech. (NIST)	USA		commercial			simulation				free	
61	IAQ-Tools	Taitem Engineering	USA	industrial	commercial	residential		simulation				US$245	US$345
62	IDEAL (Interval Data Evaluation and Analysis of Load)	PC Applications Systems	USA	industrial	commercial		performance	simulation	database	spreadsheet		US$1000	
63	Indirect Evaporative Heat Exchanger Design Tools	Coolsys Ltd.	Israel	industrial	commercial		performance	simulation				NA	
64	Indoor Humidity - Tools	Taitem Engineering	USA	industrial	commercial	residential		simulation				US$495	
65	InSite Energy Service Marketing System	XENERGY Inc.	USA	industrial	commercial				database			US$3000	
66	ISOLDE	CENERGIA	Denmark		commercial		performance					US$500	
67	ISTUM-PC, Intra-Sectoral Technology Use Model for the PC	Simon Fraser University	CAN	industrial	commercial	residential		simulation				free	
68	IWR-Main, Water Demand Analysis Software	Planning and Management Consultants Ltd.	USA	industrial	commercial	residential		simulation				US$895	

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				INDUSTRIAL	COMMERCIAL	RESIDENTIAL	PERFORMANCE	SIMULATION	DATABASE	SPREADSHEET	OTHERS	MIN	MAX
69	IWRAPS, Installation Water Rescources Analysis and Planning System	Planning and Management	USA	industrial	commercial	residential		simulation				NA	
70	Load 700	C.D.S. – The Trane Company	USA	industrial	commercial			simulation				US$795	
71	Load Express	C.D.S. – The Trane Company	USA		commercial			simulation				US$295	
72	MarketManager	Optimum Energy Products Ltd.	CAN	industrial	commercial				database			US$3495	
73	METER EXECUTIVE	Elemco Building Controls, Inc	USA	industrial	commercial	residential	performance					US$3500	
74	METRIX Energy Accounting System	Optimum Energy Products Ltd.	CAN	industrial	commercial				database			C$3495	
75	MOIST 2.1	National Inst. of Standards and Tech. (NIST)	USA	industrial	commercial	residential		simulation				free	
76	Motor Master+ Version 1.0	Washington State University	USA	industrial	commercial		performance	simulation	database			US$75	
77	PACO CALC	Paco Pumps	USA	industrial	commercial				database	spreadsheet		free	
78	PACO DXF / PACO CAD	Paco Pumps	USA	industrial	commercial				database	spreadsheet		free	
79	PACO SELECT	Paco Pumps	USA	industrial	commercial				database			US$150	
80	PEAR, Program for Energy Analysis of Residences	Lawrence Berkeley National Laboratory	USA			residential		simulation	database			free	
81	PREP	ITEM Systems	USA	industrial	commercial	residential		simulation				US$495	
82	PUMP PRO	Paco Pumps	USA	industrial	commercial				database			free	
83	QBLCC, Quick Building Life-Cycle Cost	National Inst. of Standards and Tech. (NIST)	USA	industrial	commercial	residential	performance					free	
84	RADIANCE	Lawrence Berkeley National Laboratory	USA	industrial	commercial	residential	performance	simulation				free	

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85	RateProfiler	Optimum Energy Products Ltd.	CAN	industrial	commercial			simulation				C$7000	
86	REAP-Lighting 2.1	Department of Energy and Forestry	CAN	industrial	commercial				database			free	
87	REEP, Renewable and Energy Efficiency Planning	Army Corps of Engineers	USA	industrial	commercial	residential	performance	simulation	database	spreadsheet		free	
88	Resource Manager	EPS Solutions, Inc.	USA	industrial	commercial	residential	performance		database			US$10,000+	
89	Right-Suite for Windows	Wrightsoft Corporation	USA		commercial	residential	performance					US$299	US$1299
90	SavePlus	Baldor Electric Company	USA	industrial				simulation				free	
91	SERIRES, Solar Energy Research Inst. Residential Energy Soft.	National Renewable Energy Laboratory	USA			residential		simulation				NA	
92	SHADOWS (DOS)	Tait Solar Co., Inc.	USA	industrial	commercial	residential		simulation				US$59	
93	SitePro	Regional Economic Research, Inc.	USA	industrial	commercial			simulation				NA	
94	SPARK, Simulation Problem Analysis and Research Kernel	Lawrence Berkeley National Laboratory	USA		commercial	residential	performance	simulation				NA	
95	Superlite 2.0	Lawrence Berkeley National Laboratory	USA	industrial	commercial	residential		simulation				free	
96	System Analyzer	C.D.S. - The Trane Company	USA		commercial			simulation				US$995	
97	T-DUCT	Netsal & Associates	USA	industrial	commercial	residential		simulation				US$495	
98	TEAM Software	Energy Auditing Agency	UK	industrial	commercial			simulation	database			US$575+	
99	Thermal Energy Storage Spreadsheet	Energy Resource Associates	USA	industrial	commercial	residential		simulation		spreadsheet		US$250	
100	TRACE 600	C.D.S. - The Trane Company	USA	industrial	commercial			simulation				US$1795	

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101	UBAS, Utility Bill Accounting System	General Energy Technologies	USA	industrial	commercial	residential	performance	simulation	database			US$470	US$970
102	VisualDOE 2.5	Eley Associates	USA	industrial	commercial	residential		simulation				US$950+	
103	WATERGY	U.S. Department of Energy	USA		commercial					spreadsheet		free	
104	WATSIM 1.0	Electric Power Research Inst. (EPRI) Water Heating Info. Office	USA		commercial	residential		simulation				US$495	
105	WATSMPL 1.0	Electric Power Research Inst. (EPRI) Water Heating Info. Office	USA		commercial	residential		simulation				US$150	
106	WATTSUN Version 5.5	Washington State University	USA			residential	performance	simulation				US$100	
107	WINLCCID 96	University of Illinois	USA		commercial			simulation				US$295	
108	winSARC (Windows)	Tait Solar Co., Inc.	USA	industrial	commercial	residential		simulation				US$149	
109	ZIP	National Inst. of Standards and Tech. (NIST)	USA			residential	performance					US$15	

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